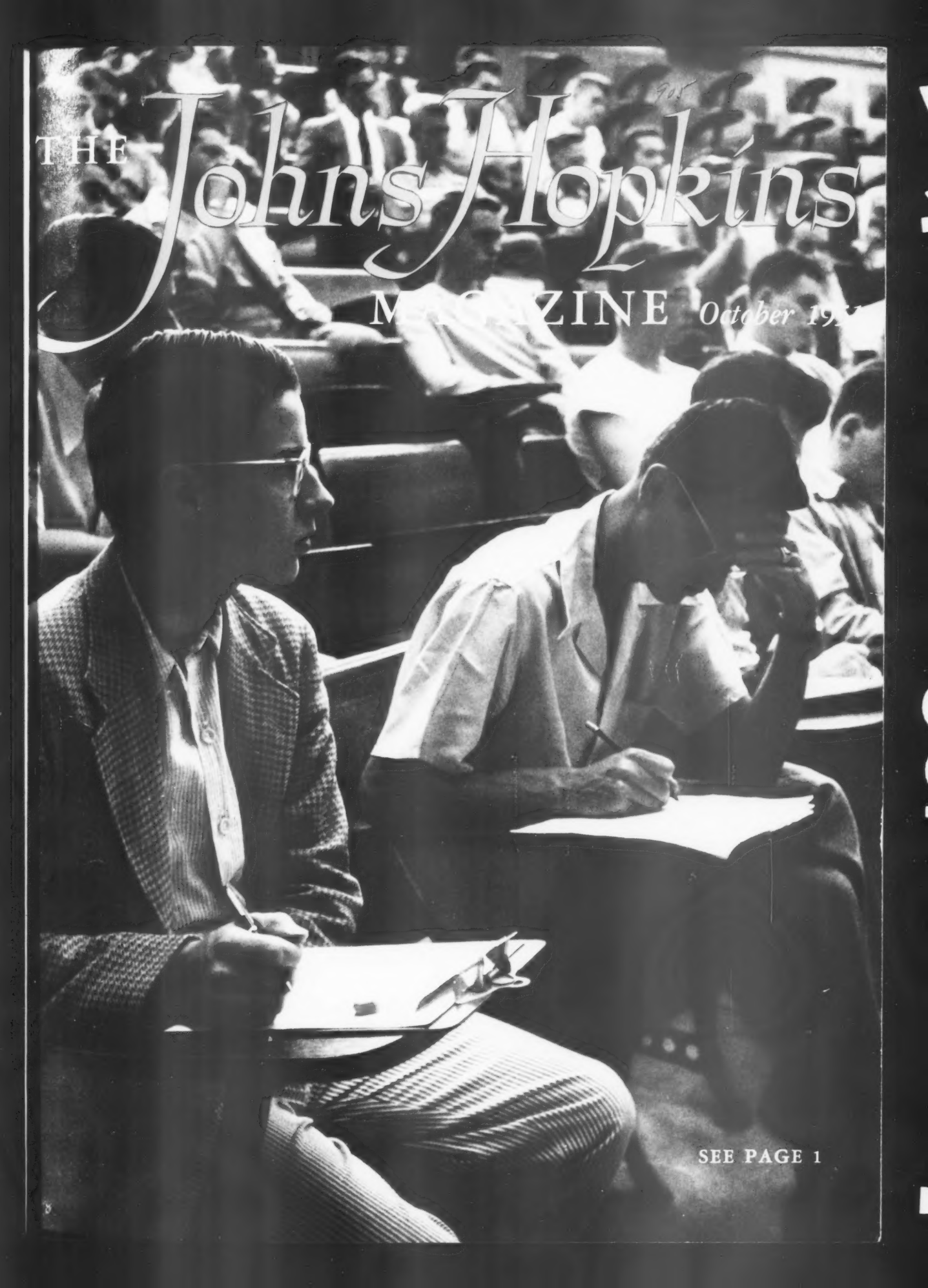
THE Johns Hopkins
MAGAZINE October 19
SEE PAGE 1

Medal of Honor

Lieutenant Frederick Henry of Clinton, Oklahoma—Medal of Honor for sacrificing himself to save his platoon in combat near Am-Dong, Korea, September 1, 1950. When the platoon could no longer hold its position, Lieutenant Henry ordered the men to pull back. But someone had to stay behind to provide covering fire. He chose to be that man, and was lost.

Always remember this—Lieutenant Henry offered his life for more than just a small platoon in far-away Korea. It was also for America. For you.

Isn't there something you can do when this man did so much? Yes, there is. You can help keep the land he loved solid and strong and secure. You can do a job for defense . . . by buying United States Defense* Bonds, *now!* For your bonds give your country greater strength. And a strong America is your best hope for peace and freedom—just as it was his.

Defense is your job, too. For the sake of *every* man in service, and for *yours*, start buying more United States Defense Bonds now.

Remember that when you're buying bonds for national defense, you're also building a personal reserve of cash savings. Remember, too, that if you don't save *regularly*, you generally don't save at all. Money you take home usually is money spent. So sign up today in the Payroll Savings Plan where you work, or the Bond-A-Month Plan where you bank. For your country's security, and your own, buy U. S. Defense Bonds now!

U.S. Savings Bonds are Defense Bonds - Buy them regularly!

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THE Johns Hopkins MAGAZINE

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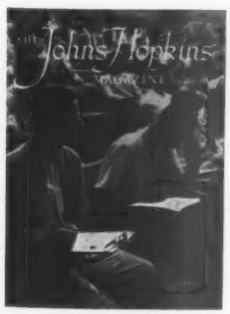

The Cover

Once, when a young man entered college, he found himself in a strange new world with few people to turn to as guides. But now he gets a strong helping hand: Freshman Week, in which the men on this month's cover are participating. A story, in pictures, of Freshman Week at Hopkins begins on Page 16.

Photo by Robert M. Mottar

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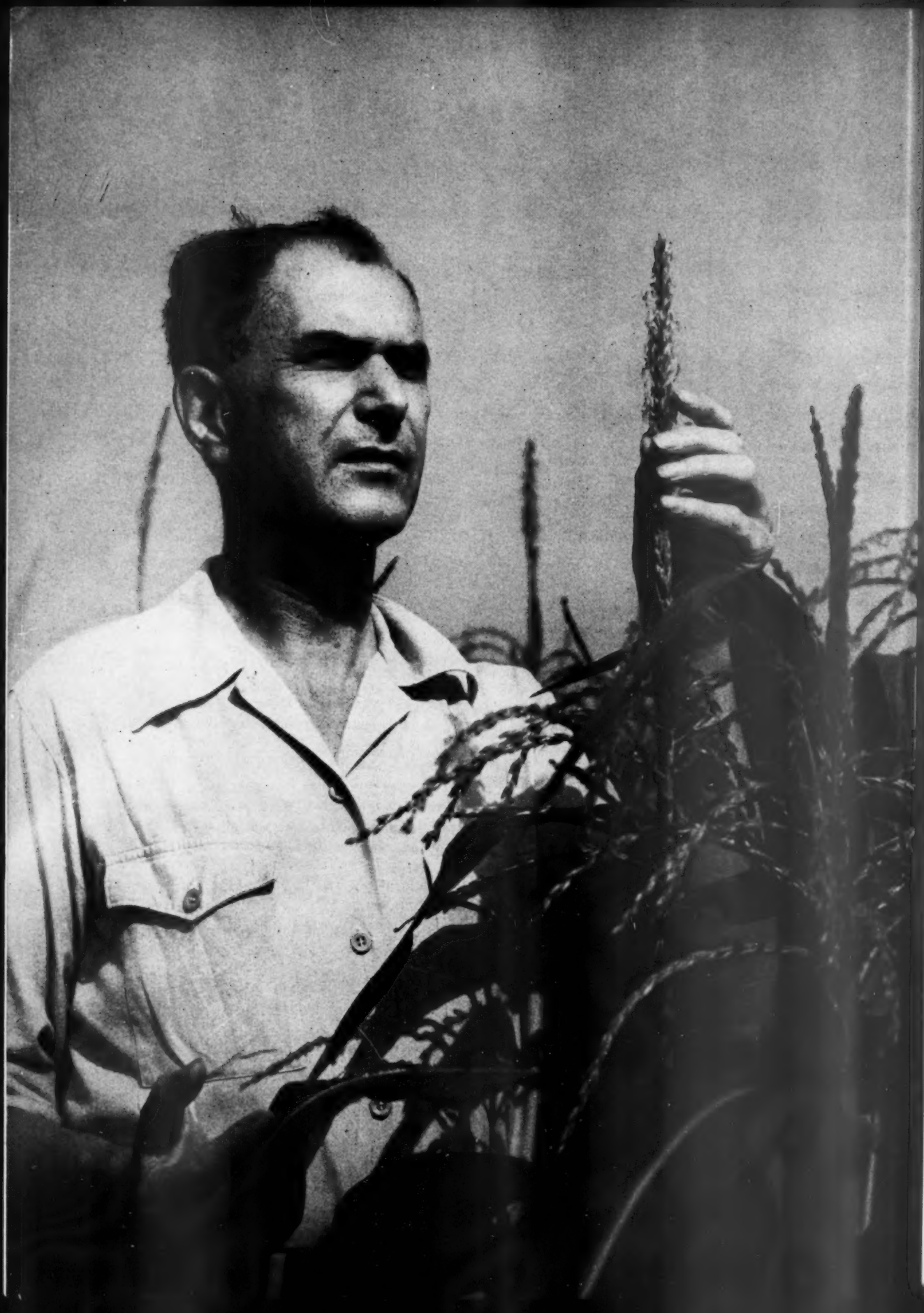


Science At Seabrook

Can farmers have bumper crops every year, even in famine areas of the world? Can aviators learn to cope with tricky turbulence near the ground? Can an industry dispose of ten million gallons of water a day without polluting streams? A young Johns Hopkins laboratory is wrestling with these problems, and more, at gigantic Seabrook Farms.

Photographs by Taubert, Seabrook Farms

In a country railroad station: one of the country's best-implemented labs

On a giant, 19,000-acre vegetable farm in southern New Jersey this month, the spinach crop is coming in. Great harvesting machines are toiling up and down the lush fields. Scores of heavy trucks are grinding along the farm's miles of dirt roads, piled high with deep-green loads.

This is Seabrook Farms, the biggest truck garden in the world. The spinach harvest this month is the last of a series which started last April and which in the past five months alone has yielded twenty-six and a half million pounds of peas, asparagus, and beets—plus enormous, but as-yet untotaled, tonnages of other vegetables. Farming here is big farming, modern farming, scientific farming.

Less than one hour after the spinach plants are cut they are delivered to a sprawling building nearly a half-mile long. Here hundreds of workers test them, grade them, wash them, package them, quick-freeze them, rush them into a vast storage warehouse where the thermometer never rises above minus-ten degrees. At a loading platform outside, refrigerator trucks are being packed with cartons of frozen food, to be hurried to grocery stores from New Jersey to the Mississippi—stores which in the coming year will sell more than eighty million pounds of the vegetables raised at Seabrook Farms in the season now ending.

The place rumbles, hisses, bustles with a sure efficiency. And it achieves results which are the envy of the food business, a model for efficiency experts, and a dependable standby of housewives in twenty-four states.

A HALF block away from all this activity stands a green-roofed, gray-frame building. It looks like a country railroad station from another century. On a plank where the name of a whistle-stop hamlet should be painted is a sign which deeply puzzles many visitors to Seabrook Farms. It says, simply, CLIMATOLOGY, and visiting drummers calling at the Farms office down the street have been known to eye it and remark, "This place is called Climatology? Why I thought it was . . ." It is only because there wasn't room on the plank for the rest of the words, a Farms receptionist explains, that the sign does not read, CLIMATOLOGY LABORATORY OF THE JOHNS HOPKINS UNIVERSITY.

Despite its antiquated look, the gray-frame station houses one of the most forward-looking, scientifically implemented groups of workers in the country. In it there exists a cosmopolitan atmosphere where scientists from all over the world come to discuss mutual problems and to pass on what they have discovered, as well as to learn. It is the center of one of the first truly revolutionary movements in agriculture since the tractor displaced the horse. One of its research men is measuring how much the water in a lake "tilts," every time the wind blows—a project in pure research which may have surprisingly practical applications. Another has devised elaborate mechanisms

◀ *Dr. C. Warren Thornthwaite, who directs Johns Hopkins' laboratory at Seabrook Farms, is one of the world's great climatologists.*

THE LABORATORY OF CLIMATOLOGY is an example of happy collaboration by a commercial firm and a university. John Seabrook (*left*), vice president of Seabrook Farms, meets here with Drs. Thornthwaite, Halstead, and Mather of Johns Hopkins.

Taubert, Seabrook Farms

CORN GROWTH is measured in the Laboratory's experimental garden by Shirley Slentz, Elizabeth Higgins.

for measuring how much water evaporates after a farmer irrigates his fields—and has supervised the development of simple adaptations of his instruments which are so uncomplicated that a twenty-cents-a-day worker in the jungles of Africa can operate them with ease. It is a center of graduate training in the many facets of climatology. The director of the laboratory, almost literally in his spare time, has worked out a method whereby ten million gallons of water a day, used for all the complex operations in Seabrook Farms' giant freezing factory, are returned to the land so that no New Jersey stream is polluted—a process which is so phenomenally successful that its originator now has more requests for similar aid than he can handle, from industrial concerns up and down the country which are harassed by water-pollution and water-depletion problems of their own.

SEPARATED as it is from the Baltimore campus of the Johns Hopkins University (Seabrook Farms is a ninety-two-mile, two-and-a-half-hour jaunt from Homewood), the Climatology Laboratory, a part of the University's Isaiah Bowman School of Geography, is one of the least-known of Hopkins' activities, as far as the public and even other University departments are concerned. But in its field, its fame is worldwide; and through its contributions it is having an important, though indirect, influence on millions of the earth's inhabitants.

These are grand claims. They come not from the Laboratory, however, but from experts outside the University who are not bound by the modesty which one might expect to encounter at the Laboratory itself. The evidence indicates that they may safely be taken at face value.

Within the last few months, for example, one scientist came exactly halfway around the world, from India, to spend a short time with some of the Laboratory's personnel; another, formerly head of the department of geography at a New Zealand university, came seeking advice on a climatological project he was about to undertake at Ibadan, Nigeria; another, from Australia, spent a week of reading in the Laboratory's library. Altogether, there have been visitors from Canada, Mexico, Guatemala, Ecuador, Brazil, Argentina, England, Ireland, Denmark, Norway, Germany, Portugal, Israel, Afghanistan, Burma, China, and Japan.

THAT the Laboratory has gained such eminence in just four years is due largely to the presence, as director, of a man who almost single-handedly has been responsible for the growth of a global movement which in a sense is revolutionizing the field of climatology. He is Dr. C. Warren Thornthwaite, the Isaiah Bowman School's professor of climatology; his disciples (who call themselves members of the "Thornthwaite School" of climatology, even though most of them have met the professor only through his scientific publications) are at work on every continent putting his theories into daily practice.

The Laboratory is the result of Dr. Thornthwaite's lifelong dream: to see, in the United States, an institute for climatologic research. In 1943, in company with Dr. John Leighly, now professor of geography at the University of California, who shared his dream, Dr. Thornthwaite told how he thought such a center should be set up.

"It can scarcely come into existence fully formed and fully armed," he wrote, "but must attain its final character gradually, through the work it accomplishes . . . The institute should be affiliated with a first-rate university . . . Most of the research undertaken would be collaborative; and while that work was in progress, representatives of agencies situated elsewhere might be temporarily in residence at the institute. Members of the institute's staff should also be moderately foot-loose, so that they might visit other institutions when the occasion arose . . .

"An exceedingly important task of the institute," Dr. Thornthwaite continued, "would be the training of climatologists . . . a further powerful reason why the

institute should be articulated with a good university. The training offered would be on the graduate level . . . An attempt would be made, however, to avoid overspecialization. Since the institute would emphasize collaborative research, students would be expected to acquire a rather broad acquaintance with other sciences. They would be asked to acquire, if possible, a more-than-superficial knowledge of some field besides climatology, so as to be equipped to work with specialists in that field . . ."

Dr. Thornthwaite's rather detailed specifications, only a small portion of which has been quoted here, were based on his conviction that the science of climatology had fallen far short of the objectives which it could—and should—be striving for. It should be helping to solve many of the truly pressing problems in agriculture and biology, he thought—problems which affect literally everyone who lives. But by 1943, at least, it had not done so; climatology "has in the past," he wrote, "been largely descriptive, and is not now developed to the point where it can contribute to the solution of the many urgent, practical problems" in those fields.

The institute he envisioned would be dedicated to advancing the science of climatology to that point.

To see the great significance of Dr. Thornthwaite's proposals, it is necessary to know more about climatology itself: what, specifically, it is; why, actually, it is important.

Climate, it is necessary to understand at the beginning, is not the same thing as *weather*. The two are closely related; one, indeed, is part of the other. But the difference is important.

Weather is a short-term thing. It is the storm predicted for this afternoon, the unseasonably low temperatures which hit parts of the country last month. It is irregular: the long, rainy spell, followed by a week that is hot and dry, followed by a day of on-again, off-again showers. It is the snowstorm on Easter Sunday or on Christmas Eve; it is the expected thunderstorm in July and the unexpected one in May. It fluctuates; it is predictable only a few days in advance and only imperfectly.

Climate, on the other hand, is a long-term thing: the recurrent, periodic behavior of the atmosphere. "It is cool in the fall," you say. That is a statement about the *climate* in your locality—based on your experience, over many years, with cool autumns. The fact that springtime is warmer than winter is another climatic phenomenon; but the fact that on March twenty-second, one year, the temperature dipped lower than it had gone all winter was, on the other hand, a *weather* phenomenon—which, unless it were to occur year after year, would not alter one whit the climatic fact that "springtime is warmer than winter."

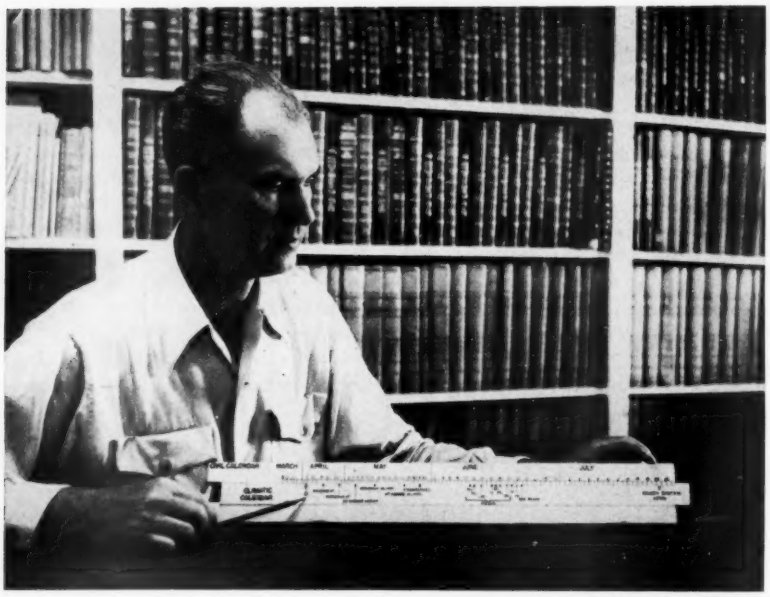
Once upon a time, meteorology was a science which concerned itself with both things: weather and climate. It still does, in a way; meteorologists keep annual records of rainfall, temperature, and humidity, and if you call your local weatherman, he can quote long-term averages on them all. But principally, these days, the meteorologist is concerned with forecasting weather; and with the ever-growing demand for his predictions and an ever-growing necessity that they be precise, he is able to do little more with his long-term facts than to continue to keep records about them. Acting upon these long-term figures, using them for the long-term benefit of mankind, is a job for which the meteorologist now has almost no time left over, after he has supplied the airlines with vital facts about flight ceilings over Nebraska this evening, shipping men with urgently needed news about the latest hurricane, and farmers with an essential forecast about the early frost which may hit their crops tonight.

But if man is to exploit his climate to the fullest—learn to live with and use the weather his climate gives him—the long-range facts about climate are as important to him as the short-term facts about weather. That is why Dr. Thornthwaite felt it was so vital to have a center where the practical application of those facts could be studied and developed. That is what he meant when he wrote, in 1943, about the "many urgent, practical problems in agriculture and biology," and how climatological counsel might help solve them. It was his convincing restatement of these beliefs which led to the establishment of the University's laboratory at Seabrook Farms, and to the renewed, fervent interest in climatology all around the world.

ISAIAH BOWMAN, the late president of Johns Hopkins, was a brilliant geographer, to whom Dr. Thornthwaite's views made great sense. They made sense also to John M. Seabrook, vice president in charge of Seabrook Farms' agricultural operations.

John Seabrook is the son of Charles F. Seabrook, known in South Jersey as "C. F." C. F. did not build his farming empire from a plot of fifty-seven acres to its present 19,000-acre-plus-freezing-plant proportions without having an unusual capacity for looking ahead and employing the newest scientific developments in his work. He had been a pioneer in using overhead-irrigation methods to fight drought; he had mechanized his

Dr. Thornthwaite's fourteen-year-old daughter, Dorothy, is one of the observers of climate conditions at fifty-five weather stations operated by the Laboratory.



Taubert, Seabrook Farms

A REVOLUTION IN AGRICULTURE is possible as a result of climatic calendar which Dr. Thornthwaite has developed. When coupled with scientific-irrigation methods, it enables farmers to know exactly how long, from sowing to harvest, it will take a plant to reach its peak in flavor and quality—a period now usually determined by guesswork. Dr. Thornthwaite has translated it into a simple slide rule (above). Lengths of months (indicated on top scale) are determined by climate conditions; note how short April is, climatically, as compared with June, even though both months have the same length by civil-calendar reckoning. If zero point on the slide, to which Dr. Thornthwaite is pointing, is set opposite the date on which a crop is planted, the correct harvest date will be indicated by the arrows to the right.

operations on a grand scale while many others were still too timid to try. But even more important, C. F. (who still runs Seabrook Farms) realized how necessary it was to mesh his farming practices with weather and climate. His son John enthusiastically agreed.

In 1945, John Seabrook began looking for ways to do it. At Johns Hopkins, then headed by Geographer Bowman, he found instant comprehension of the problem: a recognition, as Dr. Thornthwaite recalls it now, that the need for climate research was great and growing. Also, Dr. Thornthwaite recalls, "the University recognized that the opportunities for research [at Seabrook Farms] were unparalleled. Fundamental problems and applications were both present on every side." When the possibility of a collaborative effort by Seabrook Farms and John Hopkins was broached, the University was deeply interested.

Thus it came about that in 1947 the Johns Hopkins University Laboratory of Climatology opened for business at Seabrook Farms—with Dr. Thornthwaite, the man who had envisioned such a place for many years, at its helm.

The arrangement has worked beautifully for everyone concerned. For the University, it has provided the opportunity to make great contributions to human knowledge and welfare through the study of the interaction of those fundamental factors in the well-being of man: soil and the atmosphere. Although the research is centered at Seabrook Farms, a competitive commercial enterprise, its results are available to all. And since both parties to the arrangement recognize the value of student training at the Laboratory, a vital part of the operation is a "climatology field course," in which students work on practical problems at the Farms and are paid by the Farms as they learn. On top of which there is the vast Seabrook acreage itself. Its endless problems in climate, its huge facilities for experiments, provide a matchless situation for research.

For the Seabrook company, the relationship has been equally beneficial. As an extraordinarily progressive firm which is not afraid to try new things, the Farms corporation has been quick to see the value in many of the Laboratory's findings, and quick to put them to use. Before the Laboratory came along, many of these developments could not have been bought at any price.

The entire Farms operation, for example, from planting to freezing, works on a time-table which the Laboratory furnishes. In midwinter, the company can specify how it would like its harvests to occur in order to utilize its 3,200 employees, its factory, its six hundred and fifty trucks and tractors to the fullest, without week-to-week ups and downs. The Laboratory thereupon can tell the Farms precisely when to plant each field so that it will take its proper place in a harvest schedule that will deliver the crop to the factory when it is at its quality-flavor peak.

All this is figured on a "climatic calendar" and a "climatic slide rule"—Thornthwaite developments which, together with scientific-irrigation principles worked out by the professor, promise to bring about the startling revolution in agriculture to which this article referred earlier. When it does, it should change farming practices which have been in use since history began. It should bring to small farms and big farms alike, especially in what are now the famine areas of the world, the ability to produce an undreamed-of abundance of food. And better-quality food, to boot. Wherever these scientific principles have been correctly applied, crop yields have jumped enormously; the snap-bean yield rose from two hundred baskets per acre to five hundred; the per-acre spinach yield more than doubled. Potato yields increased from three hundred bushels to six hundred and fifty bushels.

The details of Dr. Thornthwaite's climatic-calendar development are a story in themselves, which *The Johns Hopkins Magazine* must wait until a future issue to report fully. But boiled down to the few sentences to which space limits it here, the idea is this:

Plants do not grow at a steady pace. Early in spring, they grow slowly; in midsummer, the same plants may develop at a great rate, due to a seasonal difference in such climatic factors as temperature and sunshine. If the extent of their growth can be thought of as consisting of growth units—e.g., if a pea plant at a given stage of its development toward maturity can be regarded as having passed through a certain number of definitely measurable units of growth (and if, as the Hopkins researchers are proving, all plants, be they peas, lawn grass, or apple trees, develop according to the same basic

growth-unit pattern)—then the key to successful application of Dr. Thornthwaite's climatic calendar can be understood.

It is possible, by such studies as the Climatology Laboratory is conducting, to determine how many growth units a plant will pass through under any given set of climate conditions. Thus, it is possible to translate the "length" of the month from civil-calendar terms—i.e., hours and days—into climatologic terms —i.e., growth units. And if one has followed this somewhat complicated reasoning this far, it is possible to see how in South Jersey the month of April, for example, is a very short month, when measured in growth units, compared with the month of June—even though both months, on the civil-calendar system of reckoning, are identical in length.

Meanwhile various scientists at the Laboratory are refining the principles of the climatic calendar; and they are conducting research which is aimed at the eventual, coveted result of making it possible for any farmer, anywhere, to apply these principles to his own operations, however small they may be. When that day comes—and when large groups of farmers can be weaned away from their almanacs, their superstitions, their customs born of centuries—the upheaval in agriculture should be something to see. And when coupled with the scientific-irrigation principles which the Laboratory is also busy working out and testing, the results should be of incalculable benefit to the human race, which as a whole has never had enough to eat. The Hopkins climatologists, though unwilling to go too far in their predictions at this point, dream of "bumper crop years" annually—and are convinced that the day is not far off on which their dreams will come true.

They have learned that there are important differences in local climate from one part of the farm to another. To determine these differences so as to take them into account in studies of the growth index, the Laboratory operates fifty-five weather stations. Dr. Thornthwaite's fourteen-year-old daughter, Dorothy, is one of the observers.

THE small group which makes up the Climatology Laboratory has an infectious enthusiasm. There are only twenty persons on the staff, but their work is already producing beneficial results and these, in turn, lead to further challenging areas in which science has yet to probe. They are pioneers, not only in the exciting sense which applies to all scholars who are on the frontiers of knowledge, but also in the sense that their field of study itself is almost virgin territory, awaiting their cultivation.

The students who have studied at the Laboratory—and those who are working toward their degrees at the present time—recognize these things and are influenced by them. They are aware that their work is of significance but that it is only just started. Beyond the limits of their present climatic investigations lies a far greater task, that of bringing recognition of the importance of climatology in everyday life.

One of the reasons for this awareness undoubtedly lies in the fact that the Laboratory has followed the student-training precepts which, as he looked toward the establishment of a climatologic institute in 1943, Dr. Thornthwaite himself laid down. And these precepts bear many of the traits of the new Johns Hopkins plan for all students.

Let Dr. Thornthwaite again describe the idea:

"The fact that climatology has in the past [not developed successfully] is in part a consequence of the departmentalization of knowledge in colleges and universities," his 1943 statement said. "Facility in the development of instruments for measuring the climatic elements demands knowledge of physics and mathematics; and facility in the analysis and interpretation of climatic data, once they are obtained, requires a knowledge of statistics and meteorology.

"But biologists do not ordinarily study physics, mathematics, and statistics. Geographers, who have a very real interest in climatology, usually study neither physics and mathematics on the one hand nor biology on the other. Physicists are absorbed with their own special problems and are not aware of the acute need that others have for the assistance that they could give. In our universities today, courses of study are so inflexible and prerequisites so extensive that it is difficult for a student to get the training that would lead to competence in physical climatology . . ."

In training students in climatology, Dr. Thornthwaite went on, graduate-level study would be offered; but over-specialization would be avoided carefully. Instead, the students would be required to learn enough about related subjects to be able to work intelligently

VARIED are the problems with which scientists wrestle at Laboratory of Climatology. Above, an Air Force student, Major Floyd, makes observations on "tilting lake".

SIMPLE but invaluable is the Laboratory's "smoke puffer," here used by Dr. Halstead. It gauges air turbulence near ground, helps farmers plan crop-dusting.

ENORMOUS quantities of water are disposed of at Farms by Thornthwaite system (note pump, *right;* spray in woods). Below, Climatologist Rudolf Geiger lectures at Lab.

Taubert, Seabrook Farms

with the specialists in those fields whose advice and collaboration they would need.

And so it has worked out. At Homewood, students majoring in climatology have had the opportunity to become familiar with the larger realms of geography through the Bowman School, and with the related subjects through study in the fields of botany, engineering, economics, medicine, mathematics, and physics.

Commencement Day, 1951 was a big one in the life of the Laboratory. It marked the passing of the first real milestone in Laboratory history: its first two students were graduated with Ph.D. degrees. To graduates Maury Halstead and John Mather, it was a satisfactory conclusion to three years of work in the Laboratory and a spur to greater achievements in the future in the training of other climatologists and the furthering of climatic research.

DR. HALSTEAD, assistant director of the Laboratory and in charge of its microclimatic research, has been associated with Dr. Thornthwaite in research capacities before. Now able to devote full time to research activities, he is quietly preparing a major revolution in the field of atmospheric physics.

Scientists have for years been trying to obtain a workable, physically sound mathematical expression for the variation, with height, of temperature, moisture, and wind in order to learn more about the phenomenon of turbulence near the ground. Dr. Halstead has developed such an expression—one that is mathematically sound and appears to overcome many of the obstacles found in the work of previous investigators. Not content with the seeming completeness of his theoretical work (critical study of his revolutionary approach by other leaders in the field has failed to show any flaws in it), Dr. Halstead is preparing to check it experimentally.

The "tilting lake" mentioned earlier is part of this experimental approach. When wind blows across the surface of a lake, it "piles up" water in the far part of the lake, so that the lake actually tilts. This is a turbulence phenomenon which is of concern to aviators and farmers. Incredibly precise instruments at the Laboratory measure the angle of water "tilt"—usually a few hundredths of an inch over a half-mile stretch of lake—while "damping out" such irrelevant influences on water level as ripples and waves. Dr. Halstead hopes to correlate the tilt with wind velocity, temperature, and humidity, and come up with significant results.

Seabrook Farms' own aviators, who dust crops with insecticides, have also been directly helped by Dr. Halstead's work. They have been furnished with a device known as a "smoke puffer," developed in the Laboratory, which will readily determine whether or not the air near the ground is too turbulent for crop dusting.

DR. MATHER, in charge of a soil-tractionability project being conducted by the Laboratory, has for the past three years been concerning himself with the moisture factor in climate. Through his work, the instruments used to measure the water need of plants have been perfected so that even an untrained farmer can make the measurements for himself. Knowing the water need (measured by an instrument, developed in the Laboratory, called an evapotranspirometer), and subtracting the amount of rainfall, one is able to determine easily the amount of supplemental irrigation needed for proper crop development. These measurements, together with the climatic calendar, figure largely in the enormous boosts in crop yields at Seabrook Farms, reported earlier in this article.

Given a free hand in that part of the Farms operations concerned with the disposal of ten million gallons of water daily by woods irrigation, Dr. Mather was able to uncover much information of significance to climatology and of use to the Farms itself. Studying the water-absorbing capacities of cultivated and uncultivated fields and the movement of water in the soil, Dr. Mather used his results to solve many of the operational problems in irrigation as well as to improve measurements of the water needs of plants. This information should ultimately lead to a better understanding of the role of moisture in climate.

Taubert, Seabrook Farms

READING RECORDER on irrigation-canal flume at Seabrook is Laboratory's Dr. Mather.

WHILE these two former students have finished their supervised course work, other students are currently undergoing training in the Laboratory. One man, Donald J. Portman, now in his third year of work at the Laboratory toward a Ph.D., is the Laboratory's expert in solar and terrestrial radiation. Two other students, Joseph J. Higgins and Andre Normandeau, a French-Canadian (both in their first year at the Laboratory), are training in a relatively new but vitally important phase of climatic research—bioclimatology. The Air Forces, recognizing the training opportunities presented by the Laboratory, have sent three of their officers there. Now in their second year, these officers—Lt. Col. R. Osborn, Major A. McFarland and Major P. M. Floyd—hope to get their Master's degree this year. Indirectly connected with the Laboratory through his two years of association and work there is another Hopkins student, William Jackson of the School of Hygiene. Primarily interested in vertebrate ecology, he has found the Laboratory facilities of great help in his own educational training as well as adding much, through his cooperation, to the intellectual broadening of the Laboratory staff and students. In addition, the U. S. Geological Survey has assigned two men to the Laboratory to work and be trained in the fields of hydrology, geology, and climatology. Former students at the Laboratory, no longer in residence there, include a Chinese, two Portuguese, and a Guatemalan. The cosmopolitan atmosphere, revealed by the many visitors to the Laboratory, is found among its students also.

AT Seabrook Farms the students have been exposed to far wider influences than the highly technical Laboratory work itself. They have had the opportunity to be a part of a large farming operation as well as to listen to world-famous visiting lecturers. The list of authorities who have visited the Laboratory and met with the students would be the envy of any lecture committee. From these men the students have become well-rounded men of science rather than "merely" climatologists. They are equipped, as modern

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HOW HITLER AND STALIN CAME TO TERMS

It is a story of tense negotiations in the bitter period before World War II

BY EDWARD HALLETT CARR

In Soviet Russia it had been an axiom since 1935 that Hitler would start a war somewhere in Europe. The bugbear of Soviet statesmen was that it might be a war between Hitler and Soviet Russia, with the Western Powers neutral or tacitly favorable to Hitler. In order to conjure this bugbear one of two main alternatives had to be envisaged: either a war against Germany in which Soviet Russia would be allied with the Western Powers, or a war between Germany and the Western Powers in which Soviet Russia would remain neutral or tacitly favorable to Germany. It is fundamental to an understanding of Soviet policy at this time that the Soviet leaders thought an aggressive war by Hitler certain, and were determined at all costs to avoid having to face Hitler alone. If the alliance with the West failed, the neutrality in a war between Germany and the West, or (at the worst) alliance with Hitler, were the only ways out.

The first alternative—alliance with the West against Hitler—had been forced on the Soviet leaders by Hitler's implacable hostility rather than spontaneously chosen by them. But, once adopted, this line was consistently pursued from 1934 to 1938, both through the League of Nations and through

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Elderman, Washington Post

May, 1939: "Waiting for Katinka to choose"

Fitzpatrick, St. Louis Post-Dispatch

"We cawn't be too exclusive"

specific pacts such as those with France and Czechoslovakia. At intervals during this time—and particularly in the first half of 1937 when the purges were at their height—circumstantial rumors circulated of approaches made to Hitler by secret emissaries of Stalin in the hope of healing the breach. Nothing to confirm these rumors has been found in any German documents captured in 1945; and, if such approaches occurred, they did not deflect the main line of Soviet policy.

What caused a change of atmosphere to set in during 1938 was the growth of doubts as to the willingness of the Western Powers to enter into effective alliance with Soviet Russia. The vacillations of the West in the face of Mussolini's aggression against Abyssinia and Hitler's coup in the Rhineland created in Moscow exactly the same impression of weakness as they created in Berlin.

Developments in Great Britain during the winter of 1937–1938 intensified these fears, which received their fullest confirmation in the Munich crisis of September, 1938. At the height of the crisis, a leading article in *Pravda*—the first for many weeks on foreign affairs—struck almost casually in its last paragraph a new note:

"The Soviet Union examines with composure the question of which particular imperialist robber stretches out his hand for this or that colony or vassal state; for it sees no difference between German and English robbers."

To see "no difference between English and German robbers" was the first hint of a potential shift from a policy of cooperation with the West to a policy of neutrality—a reversion to the old habit of regarding all "imperialist" powers as equally wicked.

Having dropped this barely audible hint, the Soviet press returned to its advocacy of a common front against Hitler, and approvingly quoted Litvinov's speech at the League of Nations in which he had declared that Soviet Russia would fulfill her obligations "in all ways available to us"—a hint at the opposition of Poland and Rumania to the passage of Soviet forces across their territories. Then, on September 29, 1938, the Munich agreement was concluded without further consultation with the Soviet Government. No overt move was made. But the chagrin felt in Moscow was not concealed, and the conclusions were left to ripen.

THUS, at a time when Hitler was still undecided whether to move first against the East or against the West, Soviet Russia was being driven to contemplate the apparent bankruptcy of his western policy. It is a tribute to the depth and tenacity of the ill feeling between the two countries that it took so long to bridge the gulf between them.

The denunciations of Bolshevism in Hitler's Nuremberg speech in September, 1938 were far less vitriolic than those of the previous year. After Munich, Hitler's increasingly bitter references to the West were matched by a corresponding diminution of acrimony, quantitative and qualitative, in regard to Soviet Russia. In October, 1938 Schulenburg, the German Ambassador in Moscow, apparently on his own initiative, suggested an agreement to keep the names and personalities of Hitler and Stalin out of the mutual press polemics; and both sides rather unexpectedly agreed to this.

The prelude to the events of the spring and summer of 1939 was a speech by Stalin at the party congress on March 10, 1939. This speech was an extraordinarily astute exercise in political tight-rope walking, from which it would be rash to draw any confident conclusion other than the indeterminate and embarrassed state of Soviet foreign policy at the time. Stalin began by stating that an imperialist war was already in progress, and naming Japan, Germany, and Italy as aggressors:

"The three aggressive states and the imperialist war started by them have turned upside down the whole system of the post-war regime. . . . The aggressor states carry on war everywhere injuring the interests of the non-aggressive states, primarily England, France, and the U.S.A., and the latter give ground and retreat, making one concession after another to the aggressors."

This attack on the aggressors was, however, carefully balanced by an attack on England and France.

Statesmen, like private individuals,

sometimes betray the subconscious processes of their own minds by the motives which they attribute to others. In retrospect the most striking sentence in the speech was perhaps the one in which Stalin summed up his diagnosis of the attitude of the Western powers: "Let every country defend itself against the aggressor as it will and can; our interest is not at stake; we shall bargain with the aggressors and with their victims." Stalin's speech of March 10 clearly did not announce any positive decision of Soviet policy; what it did was to keep all options open and to hint more plainly than before that they were open.

Five days after the speech, Hitler occupied Prague; and on March 18, encouraged no doubt by the more vigorous reaction of British opinion and (after two days' hesitation) of the British government to this coup, the Soviet government handed to the German Ambassador in Moscow an exceedingly strong note, which was published, protesting against the German action and refusing to recognize the incorporation of the Czech lands in the Reich. Some tentative exchanges now occurred between the Soviet and British governments. But a Soviet proposal for an immediate conference of the anti-Fascist powers at Bucharest to concert military measures was rejected by Great Britain; and a British proposal for a pact between Great Britain, France, Soviet Russia, and Poland for mutual consultation in the event of an act of aggression, though accepted by Moscow, was rejected by Poland. A British minister, who was in Moscow at the time for trade talks, declined to enter into any political discussions.

Then on March 31, without any further approach to the Soviet government, Great Britain gave to Poland a unilateral guarantee to come to her assistance if she were attacked. In the circumstances, the Soviet government could hardly fail to deduce that Great Britain preferred the Polish to the Soviet alliance, and desired, as at Munich, to keep Soviet Russia out of major discussions affecting the peace of Europe.

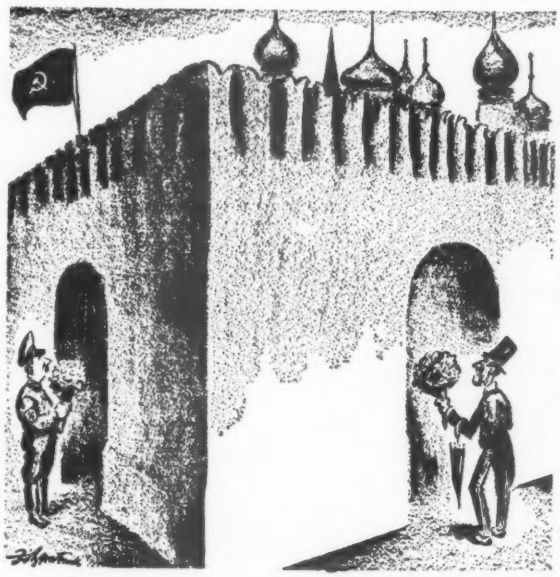
THE first formal step towards a Soviet *rapprochement* with Germany came a fortnight later in the form of an interview of the Soviet Ambassador in Berlin, Merekalov, with the German State-Secretary, Weizsäcker, on April 17. Having discussed a routine question, Merekalov led the conversation to political matters and, after some beating about the bush, bluntly asked Weizsäcker what he thought of German-Russian relations. Weizsäcker cautiously observed that "the Russian press was not fully participating in the anti-German tone of the American and some of the English papers" and hinted at a similar restraint in the German press in regard to Russia. Thus encouraged, Merekalov made the following statement:

"Russian policy had always moved in a straight line. Ideological differences of opinion had hardly influenced the Italian-Russian relationship, and they did not have to prove a stumbling block with regard to Germany either.... There exists for Russia no reason why she could not live with us on a normal footing. And from normal, the relations might become better and better."

This rather clumsy confidential approach was followed by an exchange of public gestures. The first sign came in Hitler's speech of April 28, which was devoted to an attack on Poland; contrary to custom, it contained no word of abuse of Bolshevism or of Russia. The significance of this omission was underlined some days later by a prominent Nazi to a member of the French Embassy; and it seems not unlikely that a similar hint had already been conveyed to the Soviet Embassy by way of rejoinder to the *démarche* of April 17. The answer followed promptly. On May 3, Litvinov, who had been closely associated with the policy of collective security and was a Jew, resigned the office of People's Commissar for Foreign Affairs and was succeeded by Molotov.

THE next three months—May, June, and July—saw the forefront of the stage occupied by the increasingly involved and difficult negotiations with Britain and France, the negotiations with Germany being relegated to the twilight of secret diplomacy in the background. They advanced with a slowness which testified to the depth of mutual suspicion. On May 20, the new Commissar for Foreign Affairs received the German

Continued on page 30



Fitzpatrick, St. Louis Post-Dispatch

June, 1939: "At the gates of the Kremlin"

Bishop, St. Louis Star-Times

August, 1939: "The bear went over the mountain"

THEY'RE HELPING CHILDREN SEE STRAIGHT

In the orthoptics training program at Johns Hopkins, students learn to aid young eyes. Their work is one of the most unusual professions in the world.

By RUTH D. KUEHN

Photographs for The Johns Hopkins Magazine by Jack Engeman

EYE DEVIATIONS are studied and treated by orthoptists at Johns Hopkins' Wilmer Clinic. The little girl at the right, *above*, is

THIS month, three young women will complete their training at Johns Hopkins' Wilmer Clinic to join one of the most unusual professions in the United States. Some will call them "orthoptists." Others will prefer "orthoptic technicians." But by any name, they will be very much a part of a young and challenging profession, unusual because there are so few certified members in this country.

The term "orthoptics" is not a generally familiar one. Many persons, hearing it for the first time, associate it with the better-known "orthopedics." There is, indeed, a certain similarity: both terms are derived from the Greek word *orthos*, meaning straight—in the one case applied to the skeletal system, the other to eyes. Orthoptics means, simply, "straight eyes."

The aim of orthoptic techniques is to develop single binocular vision in the patient's eyes; to get the eyes to work together as a team. To do this, the orthoptist uses instruments and techniques which exercise the eyes, in order to re-educate them to the correct process of seeing.

Orthoptic techniques are not new, for ophthalmologists have been developing them and using them for several centuries. But as a profession apart from (although dependent upon) ophthalmology, orthoptics *is* relatively new, particularly in the United States.

The first orthoptic clinic was established in this country in 1932, and not until 1940 were orthoptists unified under the American Orthoptic Council. More than unity, the Council has established criteria for good orthoptics; it has set up a system of examinations for accrediting purposes, which most students of orthoptic training programs take in order to secure certification. It has established, in cooperation with certain hospitals, a centralized program of training under which students receive two months of theoretical orthoptics followed by nine of clinical training in hospitals. (There are a few hospitals however—of which Johns Hopkins is one—which offer both the theoretical and the clinical training under one program.)

AT Johns Hopkins as in the rest of the country, the orthoptic training program is relatively new, although orthoptics itself has been an established field at Wilmer Clinic since the early 1930's.

The present training program was established about five years ago. Miss Mary Argue is the orthoptist in charge of the Wilmer Eye Muscle Clinic. In the beginning the program extended over a nine-month period; but this year, for the first time, it was lengthened to one year. With the exodus of the 1951 class, thirteen young women will have participated in the program. They have left Hopkins to conduct clinics at other hospitals or to work directly under one or a group of private practicing ophthalmologists.

AS this last would indicate, the orthoptist does not work independently, but receives patients only upon referral from an ophthalmologist. She is an integral part of his curative team; an important aid in helping his patients, particularly children, to learn to use their eyes correctly when one or both eyes are defective.

MISS KUEHN is a member of the administrative staff of the Johns Hopkins Hospital.

tested to see how much her eyes deviate from normal. A screen is held first over one eye, then over the other, while corrective prisms are put in front of one eye and girl watches light (*left*).

CHILD'S DISTANCE VISION is checked in this test. Orthoptist (*left*) holds up different-size letter E's; the patient indicates with his hand which way he thinks the E's are pointing.

Originally, before the complexity of modern medicine set in, the ophthalmologist did his own orthoptic procedures. Now he usually prefers to have the orthoptist do it—if he can find one, for there are only about 130 certified in the United States. Her training has paralleled and sometimes coincided with his.

This year's orthoptic training group at Johns Hopkins, for instance, attended classes in ophthalmology along with the third- and fourth-year medical students. Through the year they attended all the special lectures given for the house staff by the Wilmer Clinic faculty and staff and by visiting ophthalmologists. They attended ward rounds twice a week; they observed all types of eye operations. In addition, they had their own classes in orthoptics under the direction of staff members. "Of course," Miss Argue says, "theory often penetrates the clinical field, too, since the group is small and the informal clinical atmosphere is a good way of explaining the various orthoptic procedures, and the reasons for them, as they develop in the course of a clinic day."

From the start of the program, theory is integrated with practical training. Each day the students spend from four to seven hours working in the Eye Muscle Clinic receiving clinical training in both diagnosis and treatment of the problems in their field.

"Cross eyes," and "wall eyes" are colloquial terms. Everyone recognizes them as descriptive of a condition whose sufferer cannot focus upon an object without giving the appearance of looking in two directions at the same time. To the orthoptist, such a person has an "esotropia" or "exotropia," if the condition is usually obvious to others. Or a person may have an "esophoria" or "exophoria" if the condition indicates a tendency and is not openly discernible. Here again the Greek roots are helpful to an understanding of the terms: *eso* means "in," *tropos* means "turning" "esotropia" thus means that the eye turns in toward the nose. On the other hand *exo* means "out"; "exotropia' means that the eye turns out, toward the temple. The patient may also have a hyper tropia or a hyper phoria, in which case one eye would be "higher" than the other.

A term used to denote all such deviations is "squint." To the layman, "squint" may connote a protective half-closing of the eyelids when one looks toward a glaring light; but to the orthoptist the term is interchangeable with "strabismus," a condition in which both eyes are not directed toward the point of fixation. (This report will use the familiar terms "cross eyes" and "wall eyes" in referring to all such disorders, but the reader should remember that a more specific term, such as one of those discussed above, may from the

CONVERGENCE of child's eyes is measured by this instrument. Child turns knobs until pictures on two slides are superimposed.

SIMPLE TEST for judging how eyes converge is to bring a stick toward patient's nose, gauge his eyes as they follow it.

strictly accurate medical standpoint, be more applicable in individual cases.)

One of the common lay fallacies about cross-eyed and wall-eyed persons is the belief that *both* eyes deviate, turning in or out as the case may be. Actually, even though both eyes may be defective, only one eye will turn in or out—a fact which requires some explanation of the physiological structure of the crossed eye.

THE eyes have been compared to a team of horses, each having six reins. The reins are the muscles which control the movements of the eye. When one hears a sound to one's left, one's ear sends an impulse to the nerve centers of the brain which control the movements of the eyes. Under normal conditions, the proper impulse is relayed by the nerves to the eye muscles, and the eyes move in the desired direction. If the impulses are normal and the muscles unimpaired, the eyes move in a coordinated motion; if there is any abnormality in the brain centers, nerves, or eye muscles, one eye moves in the desired direction, but the other does not.

Many (but not all) reasons for cross-eyes involve the condition of the eye muscles. A muscle may be paralyzed, it may be too short or too long, or it may be weak and fibrous. In the team-of-horses metaphor, unless each rein is well constructed and firm, the team cannot move in a coordinated pattern.

The condition is not always present when the child is born; many children do not appear to be cross-eyed until they are two and one-half or three years old. Cross-eyes may be inherited; or they may result from birth injuries or improper use of forceps in delivery; or they may develop later in life from other causes. A child who is cross-eyed from birth will rarely "outgrow" it; treatment must begin at an early age to help the child learn to use his eyes correctly and to prepare him for surgery if it should be desirable for cosmetic or functional reasons.

Most children are born farsighted. This means that the rays of light which penetrate the eye come to a point of focus behind the eye, rather than in the proper place on the back of the eye, the retina. This results in blurred images.

The retina is an extension of the optic nerve, spread like tissue paper around the back of the eyeball. Light rays strike the retina at the macula, or the point of greatest vision, and the image is sent, like a television picture, to the brain. In order to attain a clear retinal image in the far-sighted eye, a tiny muscle called the ciliary, located near the lens and controlling its shape, contracts and focuses the light rays on the retina. While the ciliary muscle of the normal eye is relaxed when it is looking at distant objects, in the far-sighted eye it is partially contracted; it has partially accommodated (focused) in order to see clearly.

WHENEVER one's eyes accommodate, they tend to converge; that is, the lines of vision, usually parallel, tend to come together or cross. Even a normal person's eyes converge when they look at something very close to them; the far-sighted person's eyes accommodate—consequently tend to converge—even in looking at distant objects. The problem intensifies when the far-sighted person tries to look at close objects; he must accommodate even more—and tend to converge even more—in order to see clearly. Here "fusion" steps into the picture and keeps the eyes from over-converging, even though they accommodate sufficiently to enable the far-sighted person to see clearly. When the eyes fixate upon an object, each eye sees it from a slightly different angle. Fusion is a subconscious mental process by which the two perspectives are superimposed or coordinated to form a single, three-dimensional picture. The principle of the stereoscope is derived from this physiological function.

If the child, however, has little or no ability to fuse, he may over-converge, with consequent crossing of his eyes. Should this condition result only from far-sightedness, glasses may effect the cure, in which case the child's eyes may appear straight while glasses are being worn but crossed when the glasses are

AFTER-IMAGE TEST is given to patient in whom abnormal retinal correspondence is suspected. Child covers one eye; lighted

taken off. Usually, however, far-sightedness is only part of the problem.

There are two principal types of cross-eyes. One is *monocular*, in which the same eye always deviates; the other is the *binocular* or alternating type, in which first one eye and then the other deviates. In both instances, one eye alone is looking directly at an object.

But contrary to popular belief, cross-eyed persons do not see double. If the child has esotropia of the monocular variety, he may have seen double as a baby, when his eyes first began to cross, but soon his brain learns to ignore the image sent to it by the crossed eye—a process called "suppression." As a result, this eye is not used; it grows increasingly weaker as the child grows older, resulting in partial blindness in that eye. In binocular or alternating esotropia, a similar condition would prevail, in which the images of one eye and then of the other are suppressed in an alternating fashion, but partial blindness would not result in either eye.

THESE are but a few of the usual problems which the cross-eyed child presents to the orthoptist. In the training program for orthoptists, the students are taught to diagnose the problem by running a battery of tests; and they are taught the methods of treatment for it.

The best-known test for the actual degree of central vision is the Snellen Chart —the chart with the familiar rows of letters in smaller and smaller sizes. It can be used with children over six years old who know their alphabet, and with adults.

In the orthoptic clinic, however, many of the children are *under* six, for cross-eyes are a problem which should be taken care of as soon as it is detected. For the child from three to six years old, unfamiliar with the alphabet, the orthoptist holds up a series of different-size letter E's. The child is asked to point his hand in the direction in which the prongs of the E are facing. This is a routine check on distance vision.

A second test—the "cover" test—is aimed, basically, at measuring the deviation of one eye as compared with the other. Here the orthoptist utilizes a screen which she holds first over one eye of the patient, then over the other then back again to the first, and so on. As she does this, the orthoptist holds a light, or some other distinguishable object, at the end of her own nose. She asks her patient to watch the object constantly. As the screen moves from one eye to the other, the eye will jump or move in order to see the object. A deviated eye will move noticeably to fix on the test light.

The orthoptist can measure the extent of deviation by utilizing the screen along with a series of prisms. If the patient wears glasses already, the test is run both with and without the glasses, in order to determine how much the deviation is changed by the glasses. The test is run twice: to measure deviation for both near and far objects. Its pattern is similar in both tests: the patient watches a light at the orthoptist's nose in the near test and a light twenty feet away in the distance test. The orthoptist selects prisms of varying strengths until she locates one which will neutralize the movement of the eyes.

ANOTHER measurement test, which employs the principle of the six cardinal positions, uses an instrument called the "deviometer." These positions are related to the six muscles, or "reins", of the eye. The deviometer measures the angle of "squint" in the six positions.

In this instrument the patient's face is held in a stationary position by a frame. The child is told to watch a light thirteen inches in front of him, which the orthoptist turns in a wheel-like motion to simulate the six cardinal positions. Again the prisms are held in front of the child's eyes while the screen is alternated from one eye to the other. As the eye moves to watch the light, the orthoptist can determine the amount of deviation. If the deviation is greater in one of the six muscles than in the others, the orthoptist can surmise that she has located a defective muscle.

Still another test measures the ability of the eyes to converge. One's eyes converge, for example, when one holds a pencil at arm's length, then watches

Continued on page 28

tube (*left*) is held horizontally. Then child covers other eye and tube is held vertically. After-image should form a cross.

CHEIROSCOPE is used to test child who is suspected of suppressing one eye. As in many tests, this is designed to appeal to child as "fun."

HEAD-TILT TEST determines difference between paralysis and paresis in vertical eye muscles.

The first bewilderment is soon dispelled by Freshman Week activity.

FRESHMAN WEEK

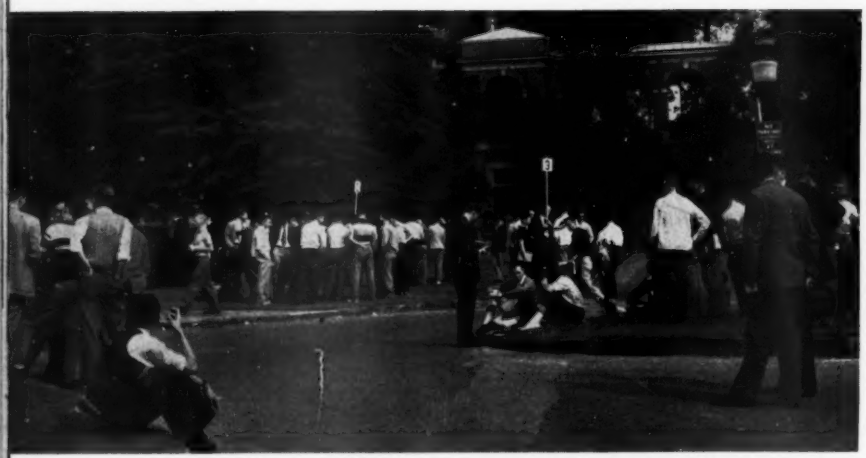
It helps new arrivals at the University to learn new customs, make new friends

WHEN a young man comes to college for the first time, he is taking one of the major steps of his life. He is usually leaving many familiar things: his home town, his family, his boyhood friends. In their place, as he enters the university, he finds a wholly new community, with ways which are strange to him. He is surrounded by unfamiliar faces. Separated from his family—often for the first time in his life—he is suddenly "on his own."

But today the jolt is far less jarring than it used to be. In recent years, there has appeared the institution of Freshman Week, through which the newcomer is helped to make the tough transitions from home to college, from high-school methods to university living. Coming to the campus a week ahead of the upperclassmen, he finds himself the center of a carefully planned program designed just for him: to help him make new friends, learn new customs, and—by the time classes begin ten days later—forget that, just a week before, these had looked like impossible problems for him.

Photographs for The Johns Hopkins Magazine by Robert M. Mottar

FRESHMAN WEEK
Continued



Newcomers to Hopkins meet their classmates as Freshman Week begins. They are gathering, *above*, into small groups, each of which is led throughout week by a faculty man and an upperclassman.

Freshmen and their group leaders get acquainte[d] on Levering Hall lawn. These pictures were ma[de] during 1950 Freshman Week.

Since university classroom procedures are different from those used in high school, new students are introduced to them several class sessions, which also double as short refresher courses in such subjects as mathematics (*below*).

ne of the first activities is a tour of the Hopkins campus, which ill be students' home for the next four years. *Above,* a group in- ects a five-million-volt machine used to bombard atoms.

Every student gets a thorough physical examination before the week is over.

Each student meets with a faculty adviser, who helps him map out his course of study.

Box lunches are served to each group of freshmen on university lawns. Faculty men often sit in and answer questions.

The Obstacle Course

The physical well-being of a student is considered highly important at Hopkins. So after receiving his medical exam (*preceding page*), every new man is tested to determine his physical aptitudes: his coordination, his aggressiveness, his muscular strength.

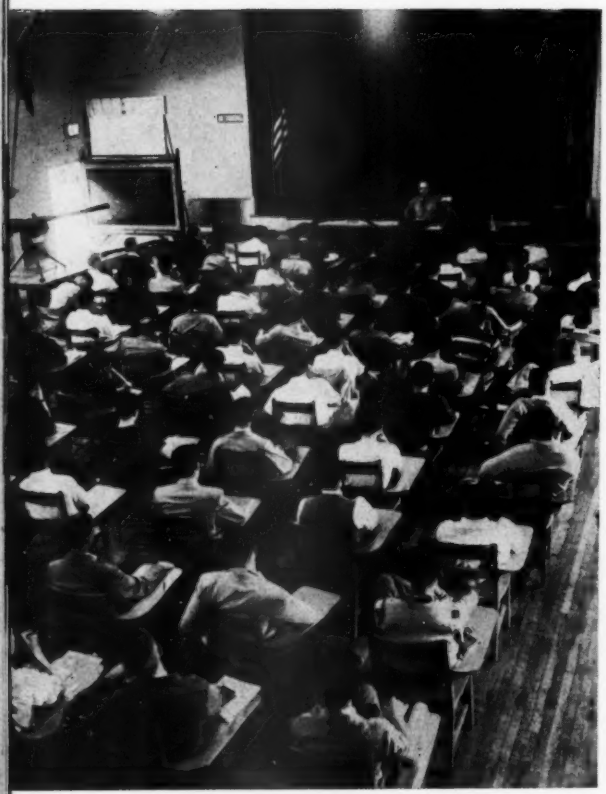
The tests are embodied in a carefully designed obstacle course, which the freshmen traverse against a stopwatch. At each point in the course, their actions are observed; and in their first-year physical-education classes, they will concentrate in those areas where they may be weak.

Obstacle test starts from flat-on-back position. When instructor (*center*, with stop-watch) says "Go," freshman will scramble to his feet and dash for the first obstacle, twenty feet away.

The course tests all sorts of physical reactions. Man at far end of gym, *above*, is throwing volleyball over net, next must hurdle "horse" at left.

This man takes hurdle in good form. *Upper right,* a panting student completes his test.

An instructor chalks up one freshman's time as other students, *background,* wait to run course. ➤



With weapons of war around the walls, freshmen hear of training opportunities from ROTC colonel.

After the lecture, a student reads an Army comic book describing the ROTC.

But The Week Is Not All Play

FRESHMAN Week has its share of light activity; but there is much serious work, as well. The Army, for instance, gets close attention from the new men. They listen intently as the professor of military science and tactics describes opportunities in reserve-officer training courses (*above*), and they ponder ROTC literature long and hard.

As the week draws to a close, the freshmen take stock. They find they have learned a lot in ten days. They are beginning to feel at home at the University; they have learned the names of scores of their fellow freshmen, know a number of upperclass leaders, and are on their way to forming close friendships with many of them. They have been introduced to churches in the Johns Hopkins neighborhood; at a "Freshman Mixer" dance they have met Baltimore college girls; they have listened to and been entertained in the home of the president of the University.

And (*right*) they have bought their first books. The real work is obviously about to begin.

A line in the Hopkins bookstore presages long nights of study to come ➤

ENTRANCE

NEWS at Johns Hopkins

THIS is not a normal year. Usually, between the closing of Summer Session and the beginning of the regular academic year in late September, there is a deserted, drowsy air at Johns Hopkins; although many research projects are still in progress, they are quiet, unobtrusive. Classes and students—the activities and people which make for a "busy" look—are missing.

Usually; but not this year.

This is a year of Selective-Service quotas for university-age young men, and of a great anxiety on the part of draft-eligible students to complete their studies before greetings come from the President of the United States. The abnormal conditions of such a year have resulted in abnormal schedules at the University in 1951.

At the beginning of the summer, a class of sixty-two freshmen began its studies at Homewood, only weeks after its members had received their high-school diplomas. A special, three-day freshman orientation program, an abbreviated version of the normal Freshman Week pictured on Page 16 of this issue, was put on for them; then they plunged into a special twelve-week course of study, lasting until September 15.

Freshmen this year had been given the choice of starting at the University either in the summer or in the fall. When the summer session was first planned last February, University authorities expected at least two-thirds of the new students to come for the summer course; but as draft pressures were relaxed somewhat, the final figure came to about one-fifth of the total freshman class. Although it was not offered as a full-scale accelerated program, the summer session will, with another next year, enable its freshman participants to enter third-year work in September; 1952.

Meanwhile, another 290 freshmen are entering Johns Hopkins this fall. In addition, some seventy-five advanced-standing students will come to Hopkins for the first time: men transferring from other institutions, for example, and graduates of junior colleges. Altogether, the fall enrolment will be virtually equal to that of last year. In the Homewood Schools, whose younger students would have been expected to be heaviest-hit by Selective Service, a total of more than two thousand persons is expected, including those working for higher degrees.

The high enrolment is somewhat surprising at first glance; new draft procedures, taking cognizance of the need for educated men in maintaining the country's security, largely account for it. Draft boards are authorized to defer students who stood in the upper half of their freshman class last year; in the upper two-thirds of their sophomore class; in the upper three-quarters of their junior class; or (in the case of men going on to graduate school) in the upper half of their senior class. In addition, those passing special exams given by Selective Service may be deferred, even if they ranked lower in their class position than the ranking listed above.

ALREADY, THREE MILLION

When Detlev W. Bronk, president of the University, told last February of Johns Hopkins' new plans for its education program and for the Hospital, a stir of excitement passed through groups which have an interest in the progress of American education and medical work. When he outlined how much the program would cost, however, there were many who gasped; the figures were big.

But a substantial start has already been made toward raising the expendable sum of six million dollars which Dr. Bronk said would be needed over the next five years, and the seventy-five to one hundred millions needed by the two Hopkins institutions before the University marks its hundredth anniversary in 1976.

To deal with the financial problems of the Hospital and the University, the two sister institutions set up, last spring, a new and permanent joint organization: the Johns Hopkins Fund, a related, but separate, eleemosynary corporation. The Fund is designed as a continuing mechanism, not simply to conduct a short money-raising campaign, but to wrestle with long-term questions of University and Hospital finance as well: consultations with persons desiring to make bequests, for example; the creation of endowments for individual departments and professorial chairs; the financing of urgently needed buildings at both the Homewood campus and the Medical Institutions.

The Fund's first job has been to make a start on the six-million-dollar need for expendable moneys between now and 1956—the need for a sound foundation on which to build the Hopkins plans for the future: funds to stabilize the institutions' current financial operation, to support promising younger medical scientists and teachers, and so on. The way in which the job has been tackled has been both successful and unique.

Without making either a city-wide, country-wide, or alumni-wide appeal, the Fund quietly set out to obtain the first 3.6 million dollars from the environment close to the University and Hospital themselves, primarily from potentially large givers: from trustees of the two institutions and from residents and home-based corporations in the City of Baltimore. Already, with only a fraction of Baltimore's potential supporters even approached, around three million dollars have been given or pledged: 1.9 million by Hospital and University trustees, 1.1 million by Baltimore individuals and companies. The balance of the six-million expendable-fund need, the Fund hopes and confidently expects, will be met by sources like these: national corporations, foundations, and individual donors outside Baltimore.

With the purchasing power of the dollar having fluctuated in the past and likely to do so in the future, the institutions' needs over the next twenty-five years, as they gear themselves to even higher service than they have been able to render in the past, must be reckoned in approximations. But the estimated total is seventy-five to one hundred millions: 3.5 million for buildings at Homewood (dormitories, commons, physics, and library space); twenty million for Homewood endowment, thirty to forty million for buildings at

the Medical School and the Hospital; and twenty million for Medical-School, School-of-Hygiene, and Hospital endowment.

Although the Fund is not conducting an alumni-wide appeal (it does not replace, for example, the Annual Alumni Roll Call, which remains the No. 1 means for alumni support, and through which former students of the University have supplied through annual giving the equivalent of the return on a multi-million-dollar endowment fund), it will welcome the advice and counsel of alumni nevertheless. The Fund is hoping for suggestions from alumni regarding potential donors across the nation, for example—persons and companies with an interest and concern in the growth of the sort of educational, healing, and research efforts for which the Johns Hopkins University and Hospital stand.

HONORARY DEGREES

In addition to those listed in the June issue of The Johns Hopkins Magazine, these Johns Hopkins faculty members and alumni were among those who received honorary degrees at college and university commencements last spring:

WILLIAM FOXWELL ALBRIGHT, W. W. Spence Professor of Semitic Languages, Johns Hopkins: Doctor of Letters, Yale University.

ALFRED BLALOCK, Professor of Surgery, Johns Hopkins: Doctor of Science, University of Chicago.

VANNEVAR BUSH, Trustee, Johns Hopkins, President of the Carnegie Institution: Doctor of Laws, Colby College.

WALTER S. GIFFORD, Trustee '29–'50, formerly president of the American Telephone and Telegraph Company and now U. S. Ambassador to Great Britain: Doctor of Laws, Harvard University.

A. MCGEHEE HARVEY, Professor of Medicine, Johns Hopkins: Doctor of Science, University of Arkansas.

ARTHUR O. LOVEJOY, Professor Emeritus of Philosophy, Johns Hopkins: Doctor of Letters, Columbia University.

ROBERT MORRISON MACIVER, fac. '34–'35, Professor of Political Philosophy and Sociology, Columbia: Doctor of Humane Letters, Yale University.

KEMP MALONE, Caroline Donovan Professor of English, Johns Hopkins: Doctor of Letters, Yale University.

JOHN J. MCCLOY, Trustee, Johns Hopkins, U. S. High Commissioner for Germany: Doctor of Laws, Harvard University.

SAMUEL ELIOT MORISON, fac. '41–'42, Jonathan Trumbull Professor of American History, Harvard: Doctor of Literature, Oxford University.

ESTHER LORING RICHARDS, Associate Professor of Psychiatry, Johns Hopkins: Doctor of Science, Wilson College.

HELEN BROOKE TAUSSIG, Associate Professor of Pediatrics, Johns Hopkins: Doctor of Science, Northwestern University.

HAROLD CLAYTON UREY, fac. '24–'28, Professor of Chemistry, University of Chicago: Doctor of Science, Yale University.

GEORGE B. WISLOCKI, M.D. '16, Professor of Anatomy, Harvard: Doctor of Science, Washington University.

James R. Edmunds, Jr., architect

New Building At The Medical Institutions

Its engineers think that this new building at the Johns Hopkins Medical Institutions, now under construction, will be the tallest structure in East Baltimore. It will stand on Monument Street, on the site of the old surgical building, and will rise to a height of thirteen stories, with two additional floors underground. Operating rooms, clinical and research laboratories, and a new accident room with ambulance ramps (*center*) designed to avoid the congestion formerly encountered by ambulances on Monument Street will be among the new building's features. Although not enough money is now available to equip all floors of the building, it is hoped that it can be obtained in the near future, in order to put the structure's facilities in full use for medical research and treatment.

THE FACULTY AND STAFF

● President Detlev W. Bronk represented the American Association for the Advancement of Science, of which he is president-elect, at the meeting in August of the British Association in Edinburgh. On the same trip, Dr. Bronk conferred in London with British educators in a study of recent developments in higher education, and with the scientific adviser to Walter S. Gifford, American Ambassador to the Court of St. James, in a study of the coordination of scientific advances.

In Germany, Dr. Bronk was scheduled to discuss with John J. McCloy, United States High Commissioner and a Johns Hopkins trustee, the relations between American science and scientific development in western Germany.

● AMONG MEMBERS OF THE BOARD OF TRUSTEES, William L. Clayton has been appointed by President Truman to the new National Security Training Commission; the group was formed to draw up a universal military training plan.

Eileen Darby—Graphic House

Martha M. Eliot

Dr. Eliot has been named chief of the Children's Bureau of the Federal Security Agency. She received her M.D. at Hopkins in 1918, was the first woman president of the American Public Health Association, and for the last two years has been an Assistant Director General of the United Nations World Health Organization at Geneva.

D. Luke Hopkins has been elected a director of the Fidelity and Deposit Company of Maryland.

●AT THE APPLIED PHYSICS LABORATORY, F. N. Frenkiel attended the symposium at the Massachusetts Institute of Technology on atmospheric turbulence in the boundary layer. He presented papers there and at the first National U. S. Congress on Applied Mechanics.

New members of the staff include Philip Rosen, formerly assistant professor of physics at Rensselaer Polytechnic Institute;

Julius L. Jackson, of the State University of Iowa;

Nelson A. Brigham, of the University of Maryland;

John L. Vanderslice, of the Institute for Advanced Study in Princeton;

Mathews C. Waddell, assistant professor of mathematics at Western Reserve University;

Milton J. Moon, of the State University of Iowa;

Harold P. Stephenson, of Duke University;

Lloyd W. Walter, Jr., of the Johns Hopkins University;

George C. Weiffenbach, of Catholic University;

Franklyn H. Brady, formerly with North American Aviation Atomic Energy Reserve, of California.

Harold M. Nicholson has returned to the APL staff after two years with the National Gas and Turbine Establishment in England.

Harold D. Smith is once again acting on the APL staff; he is on leave of absence from the Nova Scotia Research Foundation, which he has headed since 1947.

●AT THE HOSPITAL, Richard J. Ackart, assistant director in charge of professional services, has become director of the University of Virginia Hospital.

●IN THE SCHOOL OF MEDICINE, Lt. Col. Fratis L. Duff, assistant professor of military science and tactics, has been reassigned and appointed chief of the Preventive Medicine Division, Office of the Surgeon General, United States Air Force.

Arnold R. Rich, professor of pathology, has been made a Chevalier of the Legion of Honor for his "unrelenting and successful research work, especially that related to the fight against tuberculosis."

Morgan Berthrong has returned to the staff as assistant professor of pathology.

William H. Carnes, associate professor of pathology, has left to join the staff of Stanford University.

Norman Weissman, assistant professor of preventive medicine and physiological chemistry, has joined the staff at Maimonides Hospital of Brooklyn, N. Y.

Esther Loring Richards, associate professor of psychiatry, has retired after thirty years at the University.

Richard J. Bing, associate professor of surgery and assistant professor of medicine, last month became professor of experimental medicine in clinical physiology at the University of Alabama Medical College. He thus became the fifth member of the Hopkins staff to be appointed a full professor at another institution within the last two months.

Willard E. Goodwin, assistant professor of urology, has been appointed professor of urology and chief of the department at the new medical school of the University of California, Los Angeles.

●AT THE SCHOOL OF PUBLIC HEALTH AND HYGIENE, Ernest L. Stebbins, director, made a six-week summer tour of German public health installations as a member of a group sponsored by the Unitarian Service Committee. The group inspected refugee camps, factories, and water supply installations, and held consultations with leading German colleagues.

Francis J. Weber, research associate in public health administration, has left Hopkins to become regional medical director for the three-state Region Four of the Federal Security Agency.

George A. Silver, assistant professor of public health administration, has been made chief of the division of social medicine at Montefiore Hospital, New York.

●IN THE FACULTY OF PHILOSOPHY, Donald H. Andrews, professor of chemistry, gave the commencement address at Wheelock College.

Charles R. Anderson, professor of American literature, took part in a three-day literary conference at Williams College in early September.

●AT HOMEWOOD, Lynn Poole, director of public relations, has been given the outstanding achievement award of the American College Public Relations Association for his work in educational television. Mr. Poole is director of the weekly program, "The Johns Hopkins Science Review." He was also elected secretary-treasurer of the association.

Donald R. Ellegood has joined the staff of the Johns Hopkins Press as production editor.

Frank Burns has been named head football coach and a member of the physical education department. He is a former Rutgers quarterback who has

Oxford University Press

Rachel L. Carson

Her book, *The Sea Around Us*, is near the top of the non-fiction best-seller lists. "It's a pity," wrote the *New York Times Book Review* critic, "that the book's publishers did not print on its jacket a photograph of Miss Carson. It would be pleasant to know what a woman looks like who can write about an exacting science with such beauty and precision." Miss Carson received her M.A. in zoology at Johns Hopkins in 1932.

Fabian Bachrach

L. Whittington Gorham

Dr. Gorham has been appointed director of the Public Health Research Institute of the City of New York. Formerly physician-in-chief at the Albany (N.Y.) Hospital, Dr. Gorham was chairman of the Public Health Council of New York State at the time of his appointment. He received his Johns Hopkins M.D. in 1910.

been that university's freshman backfield coach for the past two seasons.

ALUMNI NOTES

Edwin G. Conklin, Ph.D. '91 (Zool.), LL.D. (hon.) '40, has been reelected president of the American Philosophical Society.

Harry R. Wahl, M.D. '12, has retired as professor of pathology at the University of Kansas School of Medicine; he had directed the department of pathology since 1919.

Willis J. Richardson, '18–'19 (Arts), has been elected vice president of Blair, Rollins & Co., national securities underwriting firm.

Carl R. Doering, C.P.H. '23, Sc.D. in Hyg. '24, has been made professor of biostatistics at the University of Oklahoma.

Fred L. Soper, C.P.H. '23, Dr.P.H. '25, fac. '26–'27, recently attended the Fourth World Health Assembly in Geneva in his capacity of director of the Pan American Sanitary Bureau of the World Health Organization.

Richard L. Waterfall, '26–'28 (Arts), has been appointed general sales manager of the Zonite Products Corporation.

Addison H. Reese, '26–'29 (Arts), has resigned as president of the County Trust Company of Maryland to become executive vice president of the American Trust Company in Charlotte, N. C.

Edward Sickel Loane, B.E. '29, g. '28–'29 (Math), has been named vice president of the Pennsylvania Water and Power Company.

Erle Henriksen, M.D. '31, fac. '32–'36, has been appointed clinical professor of gynecology at the University of Southern California School of Medicine.

James Franck, fac. '34–'38, has been given the Max Planck medal, highest award of the German Physical Society.

David H. Panitz, '34–'36 (Arts), M.A. '39 (Or. Sem.), has been named rabbi of Congregation Adas Israel in Washington.

Thomas G. Faison, M.P.H. '39, has been awarded the Bronze Star medal for outstanding service as chief of preventive medicine with the Japan Logistical Command.

Rinaldo C. Simonini, Jr., B.A. '43, has been named head of the English department of Longwood College, Virginia.

Matthew I. Wiencke, Ph.D. '47, will spend the next year at the American School of Classical Studies in Athens; he is studying Greek sculptured reliefs on a humanities research fellowship from Yale.

Benson Sundheim, B.A. '44, M.A. '47, Ph.D. '50 (Chem.), this fall became assistant professor of chemistry at New York University.

John Walton, g. '47–'48, Ph.D. '50 (Educ.), has left Queens College to become head of the Department of Education at Wesleyan College in Macon, Ga.

Dale C. Cameron, M.P.H. '51, has been appointed chief of the health services branch of the Division of Industrial Hygiene, U. S. Public Health Service.

DEATHS

(*Dates are 1951, unless otherwise noted.*)

James Alfred Betts, g. '04–'05, April 2.

Raymond Binford, Ph.D. '12 (Zool.), June 27.

James Edwin Cassidy, g. '95–'97 (Biol.), May 17.

Harold Bernard Disney, '08–'11 (Arts), July 7.

Rafael B. Espino, Ph.D. '19 (Plant Physiol.), May 18.

Charles Harris Hastings, g. '91–'93 (Hist.), April 16.

Conway S. Hodges, B.A. '98, April 9.

Frederick S. Hollis, Ph.D. '96 (Chem.), December 12, 1950.

Gilbert Houser, Ph.D. '01 (Zool.), July 16.

Conway Studio

T. Brooke Price

Mr. Price, general attorney for the American Telephone and Telegraph Company for the past ten years, has been elected vice president of the A. T. and T. Before his appointment as general attorney of the company, he had been vice president and general counsel of Western Electric. He received his Hopkins B.A. in 1912.

Lawrence Lee Iseman, M.D. '06, February 1.

Archibald Clark Kerr (Baron Inverchapel), LL.D. (hon.) '47, July 5.

James P. Kinard, Ph.D. '95 (Engl.), May 31.

Peter Theodore Knapp, '19–'20 (Engr.), July 17.

Alexander Cochrane Lang, fac. '48–'49, May 24, 1950.

Arthur Louis Meyer, fac. '19–'35, July 31.

Edward Leyburn Moreland, B.A. '05, Dr. Engr. (hon.) '50, June 17.

Rosalie M. Seymour, '21–'35 (McCoy Col.), August 2.

William Gustav Stude, '15–'16 (Arts), July 24.

William Payne Thompson, fac. '26–'28, August 9, 1948.

Donald T. Watts, '20–'22 (Arts), June 12.

Harry Weintraub, '18–'19 (Arts), August 7, 1950.

ALUMNI MEETINGS

Chemistry alumni held a dinner, celebrating the seventy-fifth anniversary of the University, in New York City in September. It was held in conjunction with the seventy-fifth anniversary of the American Chemical Society. President Bronk and Dr. Ralph E. Gibson, director of the University's Applied Physics Labora-

tory, were scheduled to be the speakers. Walter E. Lawson, Ph.D. '25, is president of the chemistry alumni, and William B. Burford, 3rd, Ph.D. '42, is secretary.

An organizational meeting of Johns Hopkins alumni in Great Britain took place in London last summer. Dr. Don Cameron Allen, Sir William Osler Professor of English, who has been on leave of absence from the University to lecture at Oxford, addressed the group. Norman S. Heaney, who is in Great Britain with the overseas division of General Motors Corporation, was named secretary.

Ohio Valley alumni scheduled a get-together at the University Club, Cincinnati, on September 28.

Science At Seabrook

Continued from page 8

scientists must be increasingly equipped, to work in wider areas than the narrow specialties to which older-style methods of graduate study have limited their scholars.

For more than three months, during the summer of 1950, the Laboratory played host to Dr. Rudolf Geiger, world-renowned German climatologist. Dr. Geiger came to teach as well as to learn; he conducted a series of over thirty lectures on microclimatology, showing that climatology cannot be divorced from geography, ecology, agriculture, or other fields of learning. "All who listened to Dr. Geiger," a member of the Laboratory staff said later, "could not help being broadened intellectually by the scope of his knowledge and understanding."

Dr. Heinz Lettau, a world-famous authority on atmospheric turbulence, has been at the Laboratory for the last three summers, lecturing and conducting seminars on his specialty. He opens up a new perspective in climatology, contributes to the broader view.

Other visitors have widened this outlook further. Dr. F Kenneth Hare, now head of the Department of Geography at McGill University, Montreal, contributed much to this broadening. Through seminars he told Laboratory members of his work in forest ecology in Canada and its relation to the rest of the world and of the effect of climate on soils and soil tractionability.

Another visitor, Professor B. J. Garnier of the University of Ibadan, Nigeria, spent three weeks at the Laboratory last summer learning and teaching. Born in China, educated in England, and a long-time resident of New Zealand, he taught about the climate and geography of these far-flung areas while learning of the Laboratory's work relating to the role of moisture in climate. Now back in Nigeria, he is building simple, inexpensive evapotranspirometers from available materials to be operated by native laborers.

His instruments are adaptations of the complex evapotranspirometers at the Climatology Laboratory. Last summer, the Laboratory helped him design such adaptations, install them alongside the highly developed American models, and compare the results with the precise readings of the Laboratory instruments. Now, Professor Garnier is installing his evapotranspirometers over a region of Africa which climatically is one of the juiciest to be found anywhere. It extends from the hot, wet forests five degrees above the Equator, through less-wet jungle areas, into the savannas' treeless plains. It ends virtually in the Sahara Desert on the north, and extends eastward into the old German regions of the Cameroon Highlands, where the altitudes range up to thirteen thousand feet. In all these areas, Professor Garnier will be making observations, with native help; and if they are successful, he will have begun a project in tropical climatology which can have great effects on man's knowledge and ability to live with his climate in some of the most difficult areas on earth.

AT Seabrook, New Jersey, Dr. Thornthwaite and the Johns Hopkins Laboratory of Climatology are building a "new science of climatology" to meet the demands of a world in which men fight for rice, and nations' jealousy of others' full market baskets have led their people to war.

Their venture is, at the very least, a challenging one.

They Help Children See Straight

Continued from page 15

it as it is brought in slowly toward the nose. It is important that a patient's eyes *can* converge; for otherwise he could not read or focus on objects close to him.

The instrument which measures the degree of convergence is called the major amblyoscope. It has two "screens" on which the orthoptist flashes, simultaneously, dissimilar slides. The child looks into a stereoscope-like viewer on the machine and turns knobs until the two slides are superimposed. Exercises on the amblyoscope fast become a game; when one slide features a cage and the other a tiger, and the child tries to put the tiger behind bars where he belongs, it seems more like keeping zoo than doing exercises. The instrument is also used in treatment, particularly following surgery, in order to increase the fusional ability of some patients' eyes. It is considered the most important instrument in an orthoptic clinic.

In cases where abnormal retinal correspondence (a bad seeing habit) is suspected, the "after-image" test is given. The child covers one eye. For ten seconds he watches a fixation point on a lighted tube, which the orthoptist holds vertically. Then the patient covers his other eye and stares at the same fixation point while the tube is held in a horizontal position. The "after-image" from this test will register upon normal eyes as a cross. But to the person who has abnormal retinal correspondence, it will not be a cross. There are other tests, employing the same principle, for working with this abnormality.

THESE are some of the procedures which the orthoptist must know thoroughly before she can make a tentative diagnosis of the patient's problem. As a student of the Wilmer Institute program, in each case she examines, she writes a report of her findings and test results, which is sent to the ophthalmologist in charge of the patient.

The treatment may involve surgery

in many cases. Glasses may be part of the treatment, particularly when the patient is farsighted. Occlusion is another method of treatment: simply placing a patch over the stronger of the two eyes in order to force the child to use the weaker eye to increase its strength. This type of treatment is often prescribed preceding surgery, and if possible is maintained until the child has equal vision in both eyes and until this vision has been stabilized.

Exercises, in the clinic and at home, may be part of the treatment. From their first day as students, the Wilmer Clinic trainees have had five or six patients of their own assigned to each of them, to be followed on a treatment schedule. Under supervision, the students see their patients twice a week, work them up on the instruments, and instruct them or their parents in exercises to be done at home.

One of the instruments used in treatment—particularly in monocular suppression—is the cheiroscope. Here again, orthoptics becomes "fun" for the child. The patient is seated at a desk which looks like a drawing board with a complicated pair of spectacles attached. A lantern slide depicting a clown or an elephant is placed in a frame at the left side of the patient, and the image is reflected by a mirror and perceived by one eye. The image is carried to the nerve centers of the brain and projected by the other eye onto a paper on the drawing board. The child is then told to outline the picture. If the patient suppresses one eye, either the picture or the outline (depending upon which eye he suppresses) disappears. The object is to teach the child to use both eyes at the same time to effect a single fusion.

The amblyoscope is also used in giving treatments for this purpose; and there are a number of other eye exercises which the orthoptists use in the clinic.

For home use the patient is instructed in exercises which utilize simply fashioned, home-made instruments on the principle of the diploscope, the Remy Separator, the convergence card, and the stereoscope. If the child is young, the parents are taught how to give the exercises and how to make them a game for him. Color is used wherever possible, along with imaginative pictures and cartoons.

What is the orthoptists' percentage of success? What hope is there for the parent who finds that his three-year-old child has "suddenly" developed a squint? More important, what prospect for the child whose eyes do not fuse correctly?

With early detection, early treatment, modern surgical procedures, orthoptics, and in many cases glasses, there now *is* hope that the cross-eyed child will be able to have straight eyes—straight both cosmetically and functionally. The frightened little cross-eyed girl who was yesterday's wallflower can, with careful development, be today's belle. The boy whose playmates' taunts about his defect have forced him into a mental shell has hope, today, of normal vision.

Their training over, the three orthoptists will leave Johns Hopkins this month to take the final portion of their certification examination in Chicago at the annual meeting of the American Orthoptic Council. A written test was given them in Baltimore in September. At Chicago, the practical and oral examination will take place. The Hopkins orthoptists have reason to be confident that their training will serve them well; in the five-year history of the program at Wilmer Clinic, not one of the students has failed.

From Hopkins, all three expect to return to their native States. Mary Virginia Stallworth will go to Alabama to head the orthoptic clinic at the Medical College of Alabama in Birmingham; Maria Borzillo will become the orthoptist at Episcopal Ear, Nose, and Throat Hospital in Washington, D.C., the institution which has sponsored her training at Johns Hopkins. Emily Manchester Townes will return to Tennessee with her medical-student husband and expects to complete her career plans when she gets there.

Orthoptics has been a tough profession to learn thoroughly and completely. But the training has not been without its lighter moments. Mrs. Townes remembers one incident particularly.

One day she asked one of her young patients to "take off your specs." The little boy indignantly replied, "*They're* not specks; they're freckles."

Recollection of that has helped Mrs. Townes through some of the more discouraging aspects of the training, as the going got difficult. She thinks that the rewards in statements like that will stand her in good stead in the future, too.

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Hitler And Stalin's Coming To Terms

Continued from page 11

ambassador, Schulenburg, for the first time.

After a discussion about economic affairs, Molotov observed that "the Soviet government could only agree to a resumption of the [economic] negotiations if the necessary 'political bases' for them had been constructed." Schulenburg, having tried in vain to probe what lay behind these words, took his leave: "Herr Molotov had apparently determined to say just so much and no more." The German Foreign Office, apprised of this conversation, replied on the following day that "we must now sit tight and wait to see if the Russians will speak more openly." It soon transpired, however, that Molotov's taciturnity had won the first round of this waiting game.

For a month discussion with Germany about economic negotiations proceeded without results. In interviews with Molotov on June 29 and July 3, Schulenburg still struggled in vain to secure from the costive commissar some amplification of his phrase of May 20 about "political bases." At the first of these conversations Molotov was particularly spiky; a reference by Schulenburg to Germany's non-aggression treaties with the Baltic states provoked the retort that "he had to doubt the permanence of such treaties after the experience which Poland had had." The impression left by these records is partly of a holding-back for tactical reasons but also partly of a profound and ineradicable mistrust of German policy in the minds of Soviet leaders.

It was not till the end of July that the ice began to melt; and this was plainly connected on the Soviet side with the deadlock in the political negotiations with Britain and France and the visit to London of a German economic commission headed by Wohltat. On July 22 it was announced that Soviet-German trade negotiations had been resumed in Berlin. The Germans now decided to speak more frankly, but through an informal channel. Schnurre, the German trade expert, was instructed to invite Astakhov, the Soviet charge-d'affaires in Berlin, and Babanin, the head of the Soviet trade delegation, to dinner. And

Le Rire, Paris (1939)

the conversation, which took place on July 27, ranged far. For the first time the alternative was clearly put:

"What could England offer Russia? At best, participation in a European war and the hostility of Germany, but not a single desirable end for Russia. What could we offer on the other hand? Neutrality and staying out of a possible European conflict, and if Moscow wished, a German-Russian understanding on mutual interests which, just as in former times, would work out to the advantage of both countries."

Three days later Weizsäcker in an instruction to Schulenburg added some further precision:

"In any development of the Polish questions, either in a peaceful manner as we desire it or in any other way that is forced on us, we would be prepared to safeguard all Soviet interests and to reach an understanding with the Moscow government. If the talk proceeds positively in the Baltic question too, the idea could be advanced that we will adjust our stand with regard to the Baltic in such a manner as to respect the vital Soviet interests in the Baltic."

Thus armed, Schulenburg had a conversation on August 3 with Molotov, who seems to have spoken most fully and eloquently on Germany's support of "the aggressive attitude of Japan towards the Soviet Union." An undeclared frontier war in the Far East between Soviet Russia and Japan had been in progress since May 1939, and had a substantial influence on the Soviet-German negotiations.

If the avoidance of a war on two fronts was the compelling motive of the Germans in the *rapprochement* with Russia, it was also constantly present in the thoughts of the Soviet negotiators. Schulenburg's summary of the situation after the conversation was as follows:

"My overall impression is that the Soviet government is at present determined to sign with England and France if they fulfil all Soviet wishes. Negotiations, to be sure, might still last a long time, especially since mistrust of England is still great. I believe that my statements made an impression on M.; it will nevertheless take a considerable effort on our part to cause the Soviet government to swing about."

But by this time the race between the two bidders for Soviet friendship had become altogether uneven; the impression could not be avoided at Moscow that one side was trying very hard and the other side not trying at all.

The Anglo-French military conversations began on August 12 and proceeded uneventfully until, on the third day, Voroshilov, Soviet commissar of defense, punctured the whole pretense by openly raising the unsolved question—the hidden crux of the whole negotiation—of the passage of Soviet troops across Polish territory in the event of German aggression, adding that it was useless to continue the discussions till that was settled. This was clearly intended as a sign-off. For on August 19 Astakhov in Berlin had conveyed the

agreement of the Soviet government to a conference in Moscow to discuss Soviet-German relations; and two days later Ribbentrop, German minister for foreign affairs, telegraphed his own readiness to come to Moscow. "An extended conference with Stalin" was the only condition laid down.

With the game in the bag, the Soviet government could afford to keep the Germans on the doorstep; and the last stages still betray a strong element of mistrust in Moscow. After a further exhibition of the hedging and stalling in which Molotov was a master, the Soviet government on August 19 agreed to a visit "one week after the proclamation of the signing of the economic agreement." This was still too slow for the German military program. Impatience at Berlin was expressed in a shower of telegrams and a personal message of August 20 from the Führer to "Herr Stalin," begging that "my foreign minister" should be received on August 22 or at the latest on August 23. Thus pressed, Stalin accepted the second date.

Ribbentrop arrived in Moscow on August 23, and the non-aggression pact and secret protocol were signed the same evening. The protocol fixed the division between Soviet and German spheres of influence "in the event of a territorial and political transformation of these areas," in the Baltic states along the northern frontier of Lithuania (Molotov particularly stressed Soviet interest in the ice-free ports of Windau and Libau, and Hitler was consulted by telephone before agreement was given) and in Poland along the line of the Narew, Vistula, and San; the Soviet government affirmed its interest, the German government its "political disinterestedness," in Bessarabia. On the next day Ribbentrop returned to Berlin. The British and French military missions bowed themselves out of Moscow thirty-six hours later; and on August 27 Molotov pronounced to the French ambassador his obituary on the negotiations:

"The Soviet government, having found that, in spite of the efforts of the three governments, the obstinate refusal of Poland made impossible a tripartite pact of mutual assistance, had for their part to settle the question by concluding a non-aggression pact with Germany. . . . A great country like the USSR could not beg Poland to accept help which she did not want at any price."

In his speech to the Supreme Soviet on August 31, Molotov also named Polish objections as the chief cause of the breakdown. On the next day the German assault on Poland, and with it the second world war, began.

It remains to draw a few guarded conclusions from the story. The essential aim of Soviet foreign policy at this time was to avoid isolation. By August, 1939 the Soviet leaders had finally convinced themselves that the Chamberlain government, whose attitude dominated that of France, was irrevocably opposed to effective cooperation with Soviet Russia. It desired to prevent the further expansion of Germany, but saw in this a lesser evil than a victory which would increase Soviet power. It refused therefore to enter into an alliance with Soviet Russia against Germany—appeasement at Munich, the preference given to Poland in March, 1939, and the delays and hesitations of the summer of 1939 were treated as proofs of this refusal; and the calculation was that, if Hitler could not be restrained by diplomatic gestures, then he must be encouraged to turn against the East; the immunity of the West would be purchased by open tacit support of aggression eastwards.

Once this diagnosis of western policy had been accepted in Moscow, only one conclusion could be drawn; if the western alliance could not be achieved, then let Hitler at all costs strike west and let Russia purchase immunity by "non-intervention." This was the conception embodied in the pact of August 23, 1939, when in return for "non-intervention" Stalin secured a breathing space of immunity from German attack, German assistance in mitigating Japanese pressure in the Far East, and German agreement to the establishment of an advanced defensive bastion beyond the

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THE MONTH
at Johns Hopkins

A calendar of events: September 20—October 31

VARSITY SPORTS

NOTE—No admission fee is charged at any Johns Hopkins home athletic events. Persons who wish to attend Hopkins games during the 1951–1952 University year may obtain a free season ticket by sending a stamped, self-addressed envelope to the Department of Physical Education and Athletics, the Johns Hopkins University, Baltimore 18, Md. Alumni should address their requests to the Alumni Relations Office, the Johns Hopkins University, Baltimore 18, Md.

FOOTBALL—Johns Hopkins vs. Franklin-Marshall, Sat., Sept. 29 (away); Susquehanna, Sat., Oct. 6 (away); Hampden-Sydney, Sat., Oct. 13 (Homewood Field, 2 p.m.); Randolph-Macon, Sat., Oct. 20 (Homewood Field, 2 p.m.); Gettysburg, Sat., Oct. 27 (Homewood Field, 2 p.m.).

SOCCER—Johns Hopkins vs. Towson, Sat., Oct. 6 (away); Gettysburg, Fri., Oct. 12 (away); Franklin-Marshall, Sat., Oct. 20 (Homewood, 12 noon); Drexel, Wed., Oct. 24 (away); Western Maryland, Sat., Oct. 27 (away).

CROSS-COUNTRY—Johns Hopkins vs. Franklin-Marshall, Sat., Oct. 13 (Homewood, 2 p.m.); Washington, Sat., Oct. 20 (Homewood, 2 p.m.); Catholic, Tues., Oct. 23 (away); Delaware, Fri., Oct. 26 (away); Loyola, Wed., Oct. 31 (Homewood, 4 p.m.)

REGISTRATION AND CLASSES

MCCOY COLLEGE (late afternoon and evening courses for students working toward degrees or for non-degree credits, or simply seeking opportunities to widen their knowledge without working for credits)—Registration Sat., Sept. 22, 10 a.m.–4 p.m., Homewood gym; Mon., Sept. 24 and Tues., Sept. 25, 5:30–8:30 p.m., Homewood gym. Classes convene Thurs., Sept. 27.

HOMEWOOD SCHOOLS (except McCoy College)—Freshman orientation begins Wed., Sept. 22; upperclass registration, Mon., Sept. 24 and Wed., Sept. 26; classes begin Thurs., Sept. 27. Advanced-studies registration, Fri., Sept. 28 and Sat., Sept. 29 (till noon); classes begin Tues., Oct. 2.

SCHOOL OF MEDICINE—First-year students and transfer students register on Fri., Sept. 28. Instruction for all classes begins Mon., Oct. 1.

SCHOOL OF HYGIENE AND PUBLIC HEALTH—Registration, Thurs.–Sat., Sept. 20–22. Classes begin Thurs., Sept. 27.

LECTURES

HERTER FOUNDATION LECTURES (physicians and medical students invited)—Prof. K. Linderstrøm-Lang, Carlsburg Laboratorium, Copenhagen, Denmark: Mon., Oct. 15—Homogeneity of Proteins; Tues., Oct. 16—Micromethods in Biological Research; Wed., Oct. 17—Structure and Enzymatic Breakdown of Proteins. Hurd Hall, 5 p.m.

TELEVISION

The Johns Hopkins Science Review will be carried by eighteen stations this fall:

Ames, Iowa: WOI	*New Orleans: WDSU
Baltimore: WAAM	New York: WABD
*Boston: WBZ	Omaha: KMTV
Chicago: WGN	Rock Island: WHBF
Cleveland: WXEL	*Salt Lake City: KSL
Columbus: WTVN	*San Antonio: KEYL
*Dallas: WFAA	*San Francisco: KPIX
*Houston: KPRC	Schenectady: WRGB
*Los Angeles: KTTV	Washington: WTTG

* In these cities, consult newspapers or call the stations for day and time of program. In other cities, broadcast time is Tuesdays, 8:30 p.m., EST.

September 25—What's New in X-Ray?; October 2—News from the Sky; October 9—To be announced; October 16—The Magic Eye; October 25—The Mighty Midget

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existing Soviet frontiers in eastern Europe. It was significant that this bastion was, and could only be, a line of defense against potential German attack, the eventual prospect of which was never absent from Soviet reckonings.

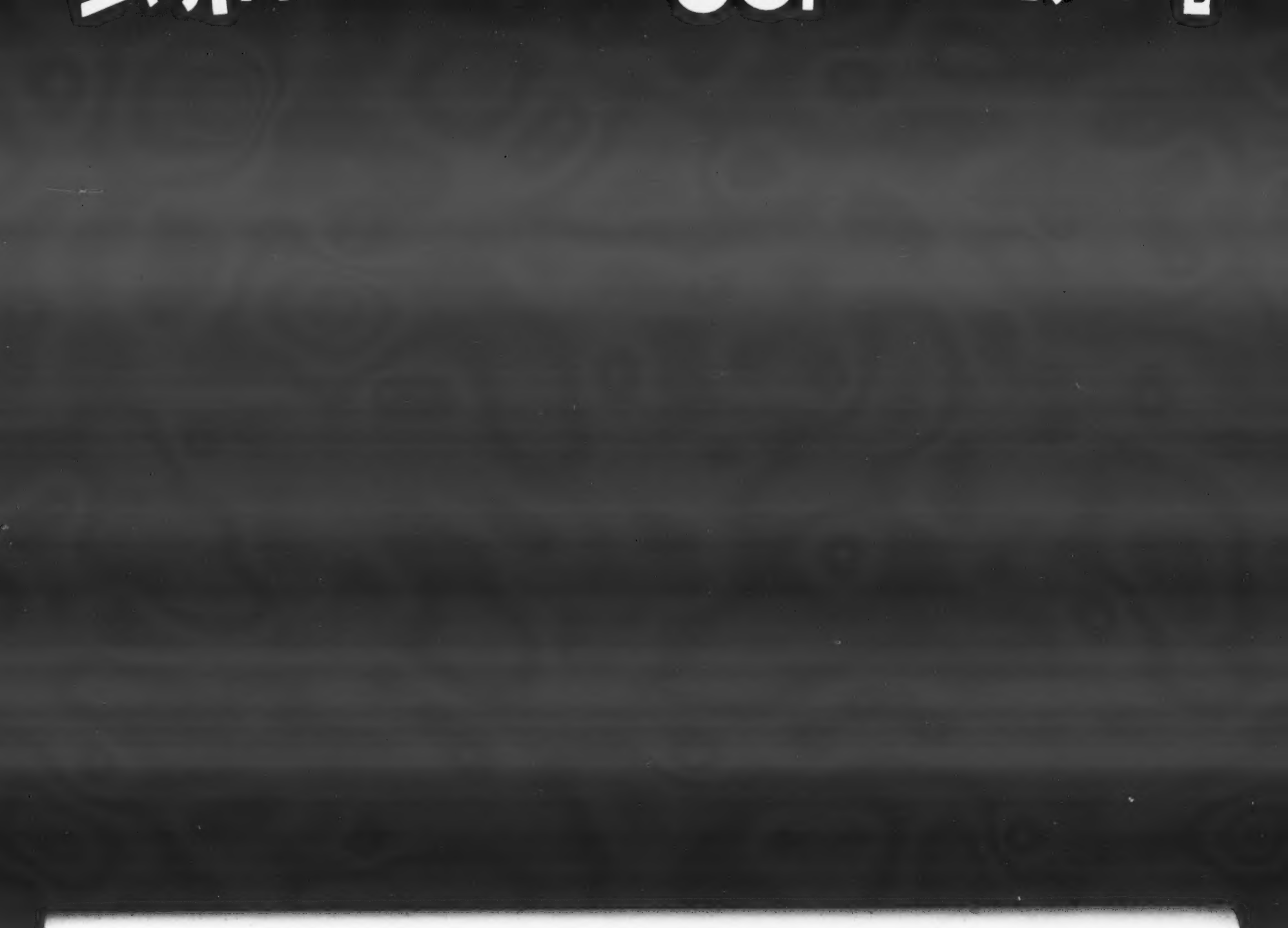
But what most of all was achieved by the pact was the assurance that, if Soviet Russia had eventually to fight Hitler, the Western Powers would already be involved, and could no longer escape by shifting the brunt of the attack onto Russia. The final justification found by the official Soviet *History of Diplomacy* for the "diplomacy of Stalin" is that "at the moment of the most intense struggle with the enemy the Soviet Union did not stand alone."

FOR Germany the moral of the pact, and of the story of German-Soviet relations over the past twenty years, was simpler and less equivocal. The diplomatic recovery, and in part also the military recovery, of Germany after the disaster of 1918 had been achieved through a policy of friendship and cooperation with Soviet Russia which made it possible to play off the East against the West. When Hitler was tempted to break with Russia in 1934 Germany was isolated and German foreign policy ran into a dead-end from which there was no escape till, after an aberration lasting five years, Hitler once more came to terms with Soviet Russia and regained his freedom of action against the West.

This was the significance for Germany of the German-Soviet pact. "What has been desired since 1870 and regarded as impossible of achievement," said Hitler boastfully to his military commanders in November, 1939, "has come to pass. For the first time in history we have to fight only on one front." So long as that situation was maintained, German fortunes prospered. But less than two years later Hitler was tempted and fell, repeating the blunder of William II and courting war against the country on whose cooperation or friendly neutrality German military success had always depended.

The question-mark which confronts the world little more than ten years after the close of this story is whether German leaders, once more in possession of the means to conduct a German foreign policy, would be content for a third time to reject the policy of Bismarck and the advice of the most successful of their monarchs to "cultivate the friendship of these barbarians."

NEXT MONTH

What are they doing in the first grade these days? Next month, with a camera, The Johns Hopkins Magazine spends a week in one of the most modern first grades in the country; goes to school with the youngsters in the morning and is with them as they learn to read, learn to keep time with music, and learn about the magic world in a lily-pond, a glass-blower's shop, and other wonderful places they've never known before. The photographic report of this week in the first grade—a revealing examination of the latest developments in modern education—will appear, with pictures by Jack Engeman, in the November, 1951 issue of

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